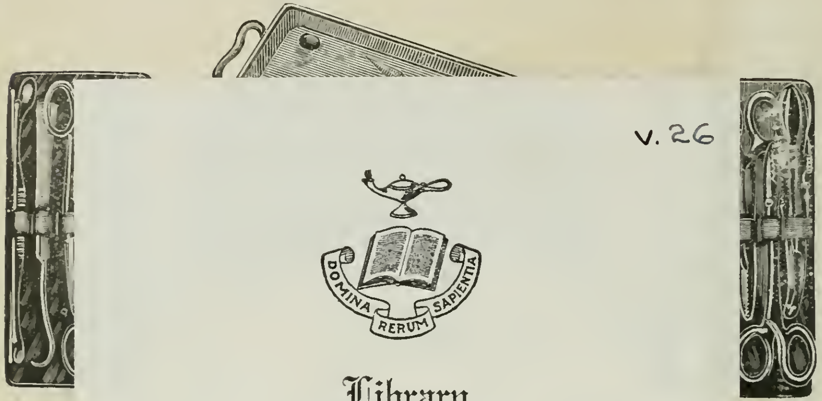
Aseptic Minor Operating Instruments
WITH
Seamless Metal Case-Sterilizer.



v. 26

DOMINA RERUM SAPIENTIA

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contents shows :

Combined Artery Forceps and Needle Holder.
Straight Aseptic Dressing Scissors.
Curved " " "
Splinter Forceps.
Combined Spatula, Fraenum and Tongue Depressor.
Tenaculum.
Spring Forceps.
Spencer Wells' Forceps.
Pean's Artery Forceps.
Double Volkman's Spoon.
Director and Aneurism Needle.
Two Probes.
Six Operating Knives.
Needle Case with six Needles.

Price for the whole set complete £2 2s. 0d. net.

R. SUMNER & CO., Ltd.,
SURGICAL INSTRUMENT MAKERS, LIVERPOOL.

The ever increasing sale of **FRY'S MALTED COCOA** is largely due to the recommendations of the Medical Profession.

Fry's

Malted Cocoa

A combination of Fry's Pure Cocoa and
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THE value of Extract of Malt as a nutritive and restorative agent for delicate and exhausted constitutions is now fully acknowledged by the Profession, the Extract being rich in muscle and fat-forming elements. It promotes, moreover, in a special and peculiar manner, the solution and digestion of all farinaceous foods, and is therefore a valuable remedy in those diseases which arise from an imperfect assimilation of these substances. The presence of the active and valuable constituents of the Malt, unimpaired and in a concentrated form, is secured in ALLEN & HANBURYS' Extract by a very careful selection of the Malt used, and the greatest attention to the temperatures at which the processes of the mashing and subsequent evaporation in vacuo are carried out.

An ordinary portion contains more of the active properties of Malt than a pint of the best ale or porter.

The combination, therefore, of ALLEN & HANBURYS' Extract of Malt with FRY'S Pure Cocoa Extract supplies to Invalids and all those possessed of weak digestive powers a delicious, refreshing, and invigorating beverage for breakfast, luncheon, or supper.

Both of its constituents being highly concentrated, the MALTED COCOA is economical in use, and possesses highly nutritive properties, and on this account can be recommended with great confidence to the public.

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☞ Members of the Profession are cordially invited to write for Samples to—

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"LAWSON TAIT"

Spring Bedsteads.

TRADE MARK.

PERMANENT GUARANTEE GIVEN WITH EACH BED.

Illustrated Catalogue of Designs, also a list of Public Institutions supplied, with Testimonials received, sent free on application.

The Patent Spring Meshes on these Bedsteads are guaranteed to stand this test (780 lb.) without injury.

Bedsteads for *special purposes* made to order.

ESTIMATES FREE.

Specially adapted for Hospitals, Asylums & Public Institutions,

Supplied to St. Thomas's Hospital; University College Hospital; North London Hospital; Royal London Ophthalmic Hospital; St. George's Hospital; Queen Charlotte's Hospital; Charing Cross Hospital; Great Northern Hospital, etc.

All Frameworks have the improved smooth castings whereby Dust and germs of Disease are readily removed by a Duster.

The DIAGONAL connection of the Mesh gives the greatest resistance in the centre of the bed, where it is most required (Gale's Patent, 3926).

GEO. GALE & SONS, Ltd.,

Dominion Works, BIRMINGHAM.

For Constipation, Gout & Rheumatism, Liver Complaints, Obesity, &c.,

PRESCRIBE

Hunyadi János

ANDREAS SAXLEHNER, BUDAPE
WATER.
HUNYADI JÁNOS
BUDAI
KESERÜVIZ
HUNYADI JÁNOS
NATURAL
Mineral Water
Proprietor
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THE BEST
APERIENT
THE WORLD'S BEST AND SAFEST NATURAL APERIENT WATER.

THE BEST NATURAL APERIENT WATER.

Directions for Use.

Dose.—To relieve constipation the average dose for an adult is from a third to half a tumbler, taken on an empty stomach on rising. To obtain the depurative and tonic effects in dyspepsia, biliousness, congestion of the liver, &c., a quarter of a tumbler should be taken every morning before breakfast.

"Hunyadi János" may be taken pure or mixed with hot or cold water. If hot water be used the temperature should be high enough to make the mixture as hot as can be drunk comfortably. If cold, the water should be at the ordinary temperature, that is to say, not iced or ice-cold.

A draught of pure water, hot or cold, taken immediately after, increases the efficacy of the laxative and obviates any after-taste.

For Children.—The dose is proportional to the age. Between 5 and 10 years of age from one to two teaspoonfuls of the water, which may be mixed with milk, will be sufficient. Above 12 the dose is a quarter of a tumbler, taken as above.

N.B.—When administered to persons in bed, somewhat larger doses are required to produce the same effect.

PROPRIETOR—

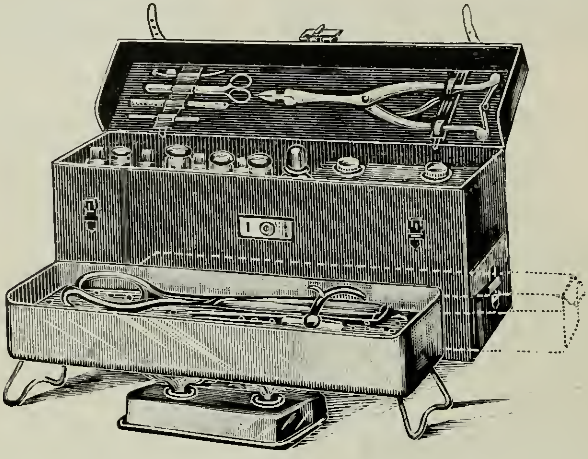
ANDREAS SAXLEHNER, BUDAPEST.

LONDON Agency: Trafalgar Buildings, Charing Cross, W.C.

Modern
and
Improved

MIDWIFERY BAG

WITH STERILIZER.



The bag is made of solid leather having a compartment beneath into which the Sterilizer fits.

The Sterilizer has no seams, being blocked out in one piece from a solid metal sheet and heavily nickel plated.

The larger instruments are carried in Sterilizer, the top portion being reserved for Nail Brush, Lamp, Chloroform Bottle, Pill and Medicine Bottles, Dredger, leaving room for Apron, Gloves, &c.

The inside Cover has loops arranged for carrying the smaller instruments.

PRICE of the Bag, together with Sterilizer, Lamp, Nail Brush in plated case, Minim measure in case, Chloroform Bottle in plated case, Dredger, 3 Pill Bottles, 3 Medicine Bottles.

£3 3 0 net (with outside Canvas Cover 7/6 extra.)

R. SUMNER & CO., Ltd.,

SURGICAL INSTRUMENT MAKERS, LIVERPOOL.

THE

"PUTTEE" LEG BANDAGE

FOR VARICOSE VEINS, etc.

THESE are Elastic Bandages fitted with a loop for the foot, and tapes for tying.

The advantage is that the bandage is always retained in position.

They are preferable to an Elastic Stocking as they can be adjusted to any required pressure, and are cooler and lighter in weight.

They require no measurements or fitting, and are very much cheaper.

WE MAKE IN TWO SIZES.

To reach the Knee (9 feet by 2½ inches), 2/- each.
To reach the Thigh (13½ feet by 2½ inches), 3/- each.

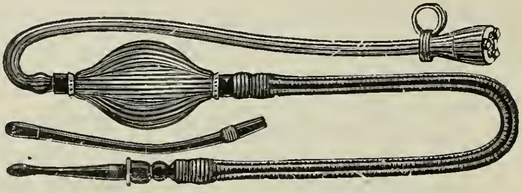
SPECIAL SIZES MADE TO ORDER.

R. SUMNER & CO., LTD.,

LIVERPOOL.

The "SUMNA"

Continuous-Flow Syringe



THE great and important feature of this Syringe is that it throws a **continuous stream of fluid,** and therefore supersedes all other syringes which are **intermittent** and invariably inject air which is impossible with the **"SUMNA."**

It requires less than half the exertion to work the **"SUMNA"** than it does the ordinary elastic bulb syringe, and as the **flow is continuous,** it prevents the return of fecalised fluids, etc., back into the syringe, which frequently happens with ordinary syringes, and is necessarily a source of great danger.

The "SUMNA" is made of the **Purest Sheet India-Rubber,** and far out-lasts ordinary manufactures (which are moulded), and it is therefore considerably cheaper in the end.

The sinker being covered with rubber, it does not cause the clinking so objectionable in syringes with metal sinkers.

The pipes or fittings are made of highly-polished Vulcanite.

The price of the Instrument, with Vaginal and Rectum Pipes, in case, is **6/6**

We, however, make the following additional fittings, all of which will be found **useful** to medical men, and which, together, make a most complete instrument; but any of the fittings are supplied separately.

Tube for Eye, forming Douche,
Price **1**/- each.

Thick Uterine Tube, with groove for back flow.
Price **2/-** each.

Harrison Irrigator for the Urethra.
Price **1/6** each.

Tube for Nose and Ear,
forming Douche,
Price **9**d. each.

Thin Uterine Stem. Price **1/6** each.

Junction for fitting
Stopcock of
Barnes' Bags.
Price **6**d. each.

PRICE of SYRINGE, complete with all Fittings, in case, 12/6

R. SUMNER & CO., Ltd.

Wholesale Druggists,

LIVERPOOL.

SIR JAMES BARR'S APPARATUS

FOR THE TREATMENT OF

SEROUS EFFUSION.

See BRADSHAW LECTURE, "British Medical Journal,"
November 9th, 1907.

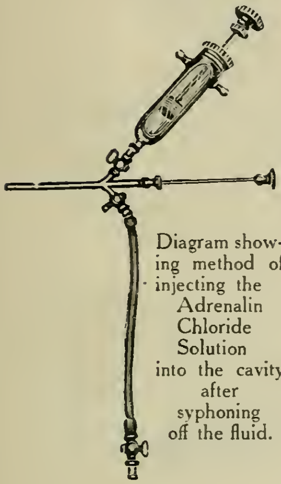


Diagram showing method of injecting the Adrenalin Chloride Solution into the cavity after syphoning off the fluid.

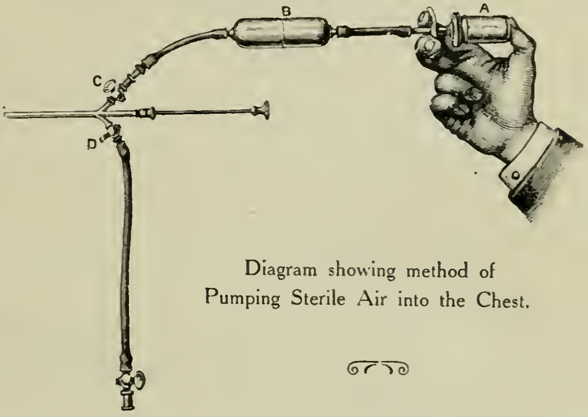


Diagram showing method of Pumping Sterile Air into the Chest.

SIR JAMES BARR'S method is, after syphoning off the fluid, to inject Suprarenalin or Adrenalin Solution, and pump into the cavity Sterilized Air.

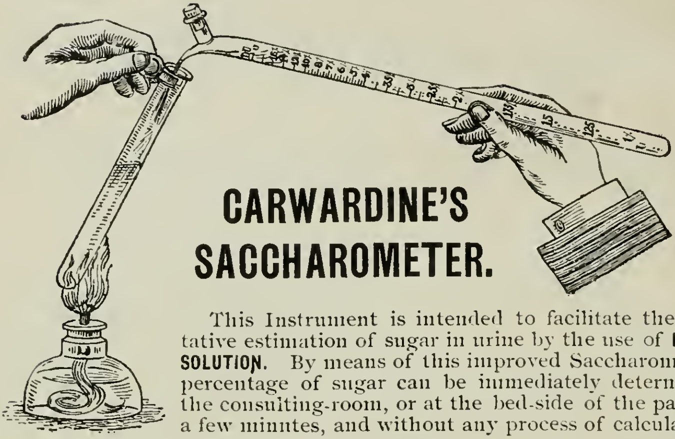
The Instrument for this purpose which he devised, consists of a Trocar and Canula, with two branches supplied with stopcocks, which prevent air from entering the cavity during operation. The lower branch is used as a syphon; the upper branch is for the injection of the Suprarenalin and also the Sterilized Air.

The Price of the Instrument, complete in Metal Case,

£3 3 0

R. SUMNER & CO., Ltd.,

SURGICAL INSTRUMENT MAKERS, LIVERPOOL.

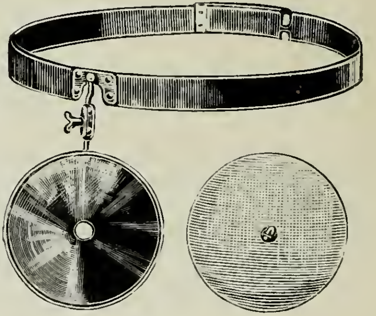


CARWARDINE'S SACCHAROMETER.

This Instrument is intended to facilitate the quantitative estimation of sugar in urine by the use of **FEHLING'S SOLUTION.** By means of this improved Saccharometer the percentage of sugar can be immediately determined in the consulting-room, or at the bed-side of the patient, in a few minutes, and without any process of calculation.

Complete in Case with Graduated Measure, Test Tube, &c., 5/- each.

NEW Aluminium LARYNGEAL MIRROR with Vulcanite HEAD-BAND.



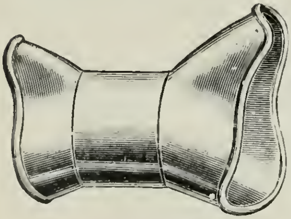
The advantage of this Instrument is that the Mirror when not in use is guarded by an Aluminium Shield, which is ingeniously fixed by a flange through the aperture in the Mirror. The shield affords protection to the Mirror, and enables the instrument to be carried loosely in a bag without fear of fracture.

The Head-band is of light pliable vulcanite. They are made in three sizes :—

3 inches in diameter	-	**11/6** each.
$3\frac{1}{4}$,, ,,	-	**12/-** ,,
$3\frac{1}{2}$,, ,,	-	**12/6** ,,

McCARDIE'S ANÆSTHETIC INHALER,

For ADULTS and INFANTS.



This Mask is made of metal, and has two Face-pieces, one on each side, made in such sizes that will fit either Children or Adults. It can be used for "A.C.E." Chloroform or Ether. The arrangement is exceedingly simple, and allows ample admission of air.

PRICE - - **8/6** EACH.

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SUITABLE FOR CONSULTING ROOMS AND SURGERIES, AT MODERATE PRICES.

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Measurements—
25 × 15 × 36 ins.

Hollow Tubular Legs,
Glass Top,
2 White Enamelled Shelves.

Without Castors - - -	**37/-**	each.
With ,, - - -	**40/-**	,,

No. 2.—A similar Table, smaller size, with one shelf only, 22 × 17 × 30 ins.

Without Castors - - -	**25/-**	each.
With ,, - - -	**28/-**	,,

R. SUMNER & CO., LTD.,

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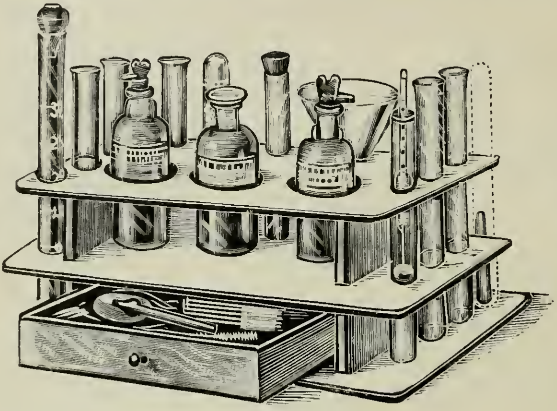
New URINARY TEST STAND

PRICE **10/6** EACH NET.



PRICE **10/6** EACH NET.

MESSRS. SUMNER & CO. are particularly desirous of calling the attention of medical gentlemen to their new **URINARY TEST STAND.** This handy little Stand has been specially designed with the view of placing a complete set of Urinary Testing Apparatus, with Solutions, in the hands of medical men at an extraordinary low price. We offer it as being equal in every way to the more elaborate stands hitherto designed. Not only is it complete, but the different articles are so arranged as to take up a minimum amount of space, and, consequently, the Stand measures only 10¼-ins. by 5¼-ins. It is well and substantially made, and is really of good appearance, quite an ornament to a consulting room table. The contents are as follows:—

Urinometer
Albuminometer
Spirit Lamp
Drop Pipette with India Rubber Suction Ball
Graduated C.C. Tube
Test Tubes
2 oz. Stoppered Bottle of Nitric Acid
2 oz. Drop Bottle of Roberts' Test Solution for Sugar
2 oz. Drop Bottle containing Esbach's Test Solution for Albumen
Funnel
Test Tube Brushes
Packet each Red and Blue Litmus Paper
Packets of Filter Paper
Watch Glass
Graduated Pipettes

From the above it will be seen that, although offered at such a singularly cheap price, it is both compact and useful, and we may say without fear of contradiction, that a Stand of such exceptional value has never before been offered at the price.

It is admirably adapted for use in Hospital Wards.

R. SUMNER & CO., Ltd., 50a, Lord Street, LIVERPOOL.

APPLICATION OF OINTMENTS

TO INTERNAL CAVITIES BY THE AID OF COLLAPSIBLE TUBES.

This method of treatment having become largely adopted, we present to the Medical profession a series of Ointments which have been thoroughly tested in the diseases indicated.

For the Urethra two kinds of Catheters are recommended:—

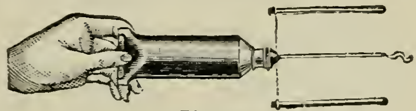


Fig. 1.

For GONORRHŒA and URETHRITIS.

1st.—For recent cases. A Stiff Vulcanite Catheter (*Fig.* 1) is preferred (with this instrument we supply three Catheters, and it is advisable that the largest that can be passed without pain be used).

For GLEET and Long-standing Cases of GONORRHŒA.

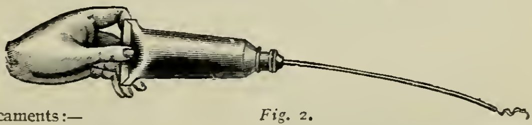


Fig. 2.

2nd.—A 9-in. "flexible" Catheter, and is intended for diseases far down the Urethra. Either of the above Catheters are supplied with Ointment Tubes containing the following medicaments:—

1. Iodoform & Eucalyptus
2. Do. do. and Cocaine
3. Thallin
4. Do. and Cocaine
5. Iodoform, Eucalyptus & Perchloride of Mercury
6. Dermatol
7. Aristol
8. Biniodide of Mercury
9. Hydrastin
10. Iodol and Eucalyptus
11. Sulphate of Zinc
12. Permanganate of Zinc
13. Resorcin, Hydrastin & Extract of Belladonna
14. Loretin
15. Protargol

Price complete, **5/-** each; with Cocaine, **6/-** each.
Ointment Tubes without Catheters, **1/6** each; with Cocaine, **2/6** each; by post, **3**d. extra.

In ordering please specify number of the Ointment Tubes, and also whether the Stiff Vulcanite Catheters or the Long Flexible Stem is required.

For DISEASES of the RECTUM.

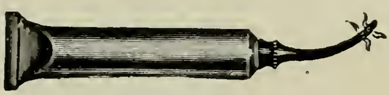


Fig. 3

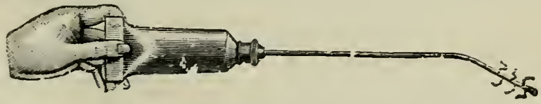
Each Collapsible Tube is fitted with a specially designed Vulcanite Pipe.

WE PREPARE THE FOLLOWING OINTMENTS:

1. Boric Acid and Glycerine
2. Cocaine and Morphia
3. Ung. Gallæ c. Opio
4. Hamamelis
5. Do. and Cocaine
6. Ung. Conii
7. Ung. Belladonna
8. Chrysarobin, Iodoform, and Belladonna
9. Gallic Acid and Belladonna
10. Oxide of Zinc and Boric Acid
11. Perchloride of Iron
12. Acetate of Lead and Belladonna
13. Pilewort Ointment

All the above Tubes complete with Pipe, **1/6** each, with the exception of those containing Cocaine and Conium, which are **2/6** each. By post, **3**d. extra.

For DISEASES of the UTERUS.



The Vulcanite Stem and Ointments have been made at the suggestion of Dr. DUKE, Cheltenham.

1. Antiseptic (Iodoform)
2. Do. (Boric Acid)
3. Astringent (Tannic Acid)
4. Escharotic (Chlr. of Zinc)
5. Anodyne (Cocaine and Morphia), *useful in Cancer*

Price of Stem, with Ointment Tube of either Nos. 1, 2, 3 or 4 .. each 5s.
" " No. 5 .. .. .. " 6s.
Spare Collapsible Tubes of Ointment, Nos. 1, 2, 3 and 4 .. " 2s.
" " " No. 5 .. .. .. " 3s.
By Post 3d. EXTRA.

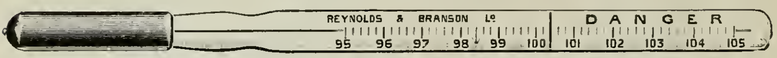
N.B.—We will be pleased to supply Tubes filled according to physicians' own formulæ.

R. SUMNER & CO. Ltd. Wholesale and Export Druggists, **LIVERPOOL.**

MIDWIFE'S THERMOMETER.

Designed by DR. R. J. COLLIE,

Superintendent of the Midwifery Classes of the London County Council.



This Thermometer has been designed for those who are unaccustomed to the use of the Clinical. It is 5 inches in length, thus allowing for a clear open scale; the bore is large, giving a broad column of Mercury.

A thick red line is placed at 100·4° and the figures above this line are in red with the word "Danger" above in large letters: the figures below 100·4° are in black.

In Vulcanite Case, Price 3s. each.

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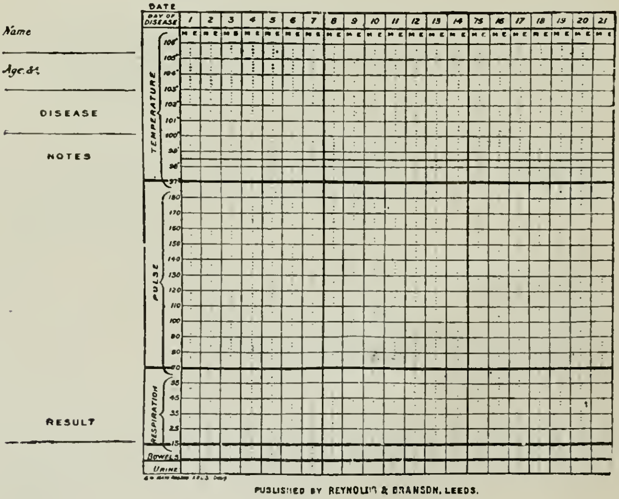
MORNING AND EVENING AND 4-HOURLY.

Suggested by A. W. MAYO ROBSON, Esq., F.R.C.S.

(Entered at Stationers' Hall.)



Price 6d. per Dozen. 3s. 6d. per 100.

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REYNOLDS & BRANSON, LTD., LEEDS.

"Maltine"

With COD LIVER OIL

"MALTINE contains the concentrated essence of malt. It is rich in diastase, phosphates, proteids, and carbo-hydrates. In "MALTINE" with COD LIVER OIL, 30 per cent of the best Norwegian cod liver oil is molecularly incorporated in the "MALTINE."

After nearly thirty years' successful use by the Medical Profession, it is unnecessary to lay stress on the therapeutic properties of "MALTINE" with COD LIVER OIL. It still continues to be the product to which physicians have resort for patients intolerant of cod liver oil.

Apart from its own dietetic value, it ("MALTINE") certainly, when combined with Cod Liver Oil, enables the latter to be taken by persons who can neither swallow nor assimilate it in any other form."—*The British Medical Journal*, Aug. 31st, 1907.

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LIMITED,
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Who will be pleased to send samples free of charge to Medical Men.

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Prepared from Beef, Milk, and Gluten, Predigested.

A PALATABLE, RESTORATIVE FOOD.

Liquid Peptonoids provides assimilable nutriment that leaves no irritating residuum, possesses mildly stimulating properties, and can be tolerated when other forms of nourishment are not borne.

As an "Emergency Food" and a Dietetic Auxiliary in Convalescence, &c., "LIQUID PEPTONOIDS" (Carnrick) has rendered excellent service.

"Readily taken and well borne even by a very delicate stomach."—*British Medical Journal.*

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Will be pleased to send Specimens Free of Charge to Medical Men.

By Royal Warrant to His Majesty the King.

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FROM FINEST BRITISH BEEF.

FOR ALL CASES OF
EXHAUSTION AND . .
WEAK DIGESTION . .

BRAND & CO., Ltd.,
MAYFAIR WORKS,
VAUXHALL, S.W.

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EFFERVESCENT
(COMPRESSED) TABLETS OF
LITHIA

Each contains five grains of the Citrate, and affords a convenient method for administering a **definite quantity** of soluble Lithia in a pleasant form, besides the advantage of having fresh water with each dose; presenting a therapeutic value of a higher standard than the various spring waters, which often contain but an indefinite quantity of the necessary salt.

Artificial Lithia Water thus produced is useful in sub-acute and chronic **Rheumatism, Rheumatic Gout, Uric Acid Diathesis, and Irritable Bladder** from excess of Acid in the Urine. The dose of Lithia, as prepared from **Warner & Co.'s Compressed Tablets,** can be regulated very readily by dissolving one or more in any desired quantity of water.

Per Bottle. 5 gr., **1s. 6d.** post free.

TONO SUMBUL CORDIAL.

(W. R. WARNER & CO.)

℞ Nerve-tonic properties of Sumbul
Blood making ,, Iron
Anti-periodic ,, Cichona
Acid phosphates
Aromatics, Sherry Wine, *q. s.*
Sig. Tablespoonful to be taken before meals

TONO SUMBUL CORDIAL having a delightful and pleasing taste, replaces all nauseating bitter tonics. Patients taking TONO SUMBUL regularly as a tonic prescribed by the physician, will gain strength and weight.

SUMBUL is particularly valuable in cases of nervousness of a low, depressing character, and is the remedy *par excellence* for nervous hysterical females who need building up.

Only the purest materials enter into its composition, prepared under the supervision of our experienced chemists.

It does not contain coca or any ingredient which might induce a drug habit, but is a superior tonic used to advantage and discontinued with no unpleasant after effects.

One size only. 4 - per Bottle, post free in United Kingdom.

Write for complete Price List of PILLS, GRANULES, and PARVULES, &c., at Reduced Quotations by W. R. Warner & Co., giving upwards of 250 Excellent Formulæ.

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THOROUGH ROOM DISINFECTION.

As described at the Leeds Congress of the Sanitary Institute, 1897, *and at the Meeting of the British Medical Association at Edinburgh*, 1898.

By Royal Letters Patent.
No. 26,667, A.D. 1896.

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By means of this Lamp Schering's Dry Formalin Tablets can be converted into free Formic Aldehyde Gas.

In Tuberculosis, Whooping Cough, Influenza, and all infectious Diseases, one Tablet should be placed in the outer pan frequently during the day, and allowed to gasify slowly.

This Lamp is an excellent Deodorizer, and should be used in cases of foul-smelling Ulcers, Gangrene, etc., etc.

SCHERING'S PURE FORMALIN

(Forty per cent.)

Clean, effective, non-poisonous; most powerful Disinfectant and Deodorant.

One Gallon added to Thirty-nine Gallons of water makes Forty Gallons of a Powerful and unequalled Disinfectant and Deodorant Fluid.

SCHERING'S GLUTOL (Dr. SCHLEICH)

Is the ideal antiseptic in the treatment of fresh or infected wounds, forming a firm scab in a short space of time.

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(SAVARESSE.)

Two to be taken 3 times a day.

THE envelope of animal MEMBRANE in SAVARESSE'S CAPSULES prevents the usual nausea and "repeating" caused by the Sandal Wood Oil, as the Capsule does not burst in the stomach.

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The Oil in SAVARESSE'S Capsules being distilled by ourselves, Physicians may rely upon its absolute purity, and look for a definite result at a reasonably early date.

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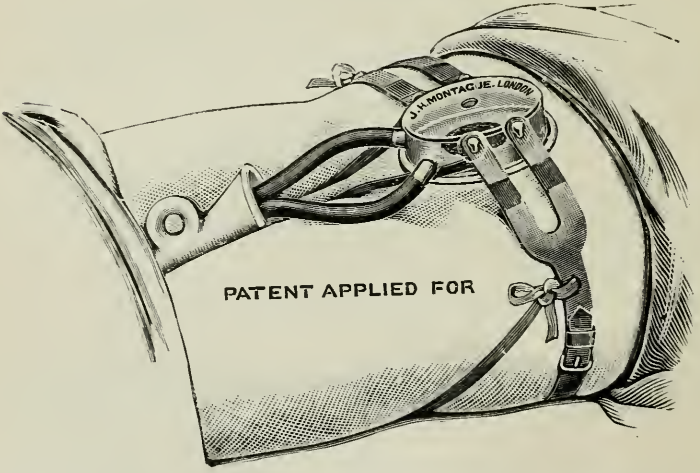

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Hofrat Dr. Goldschmidt, Bad Reichenhall ("Deutsche Praxis," Nr. 19, 1903). Surgeon-General Ritter von Zgórski ("Repertorium der Pract. Medizin," Nr. 7, 1904). Dr. Manfred Fränkel, Berlin ("Wiener Klin. Rundschau," Nr. 29/30, 1905) Dr. A. Toepfer, Jersey City ("New York Medicin. Wochenschr.," Sept., 1905). Dr. Gustav Bjorkmann, Professor of Physiology, Milwaukee Medical College, Milwaukee, U.S.A. ("The Medical Practitioner and Examiner," Sept., 1905). Dr. F. Hotys, Ex-Army Surgeon ("Medic. Chirurg. Centralblatt,' Nr. 3, 1906. Dr. Hubert Richardson, of Maryland University. "The Dietetic and Hygienic Gazette," Feb. 1906). Geheimrat Prof. Senatar, Berlin ("Russ. Medic. Rundschau," Jan. 1907). Dr. Ludwig Weil, Stuttgart ("Medic. Corr. Blatt," Sept. 15, 1906). Dr. F. Koren, Christiania ("Tidshrift for Kemi, Farmacie og Terapi," Nr. 6, 1907). Dr. Kaminsky. Paris ("Le Progrès Médical," Nr. 36, 1907).

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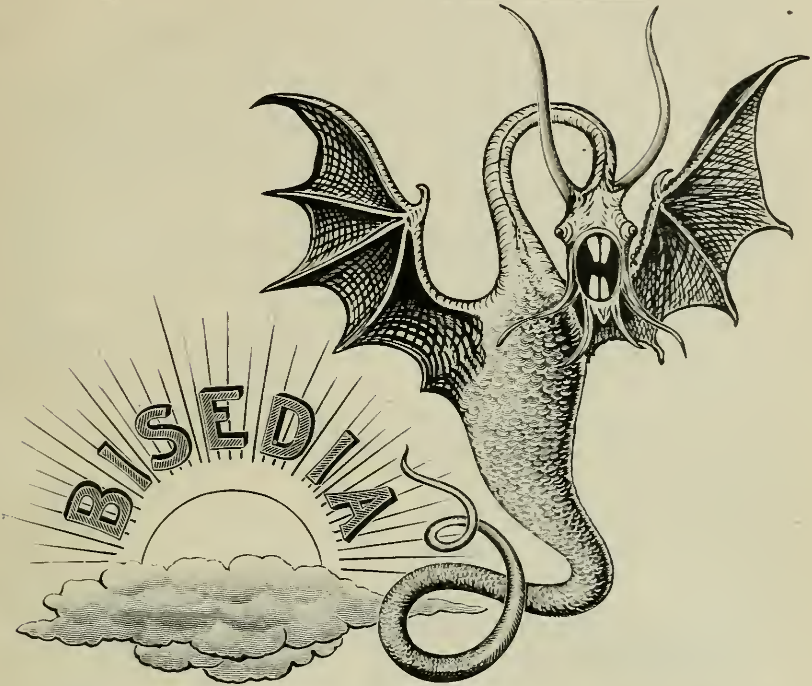

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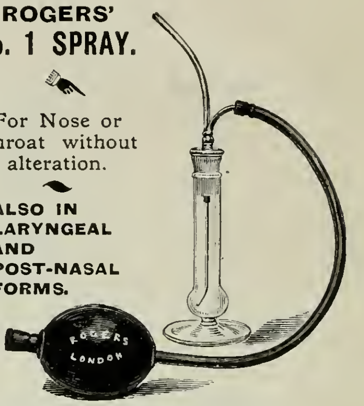

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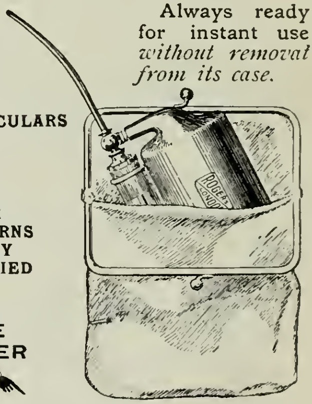

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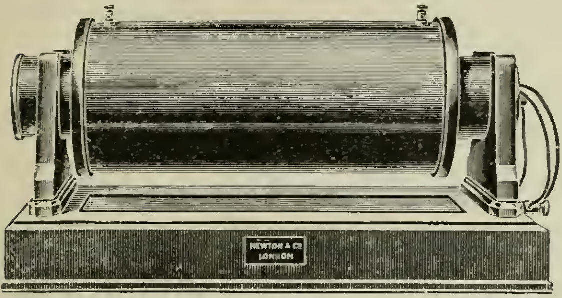

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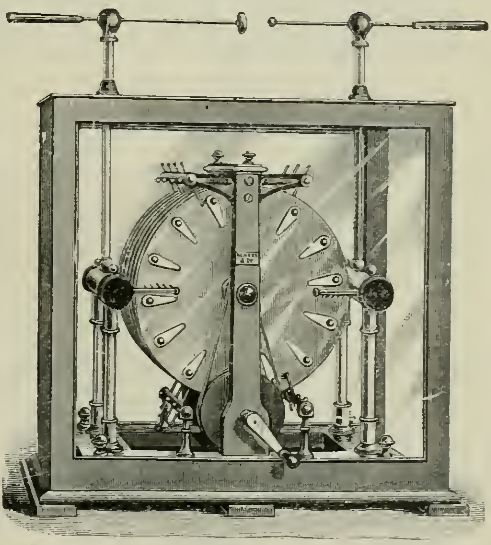

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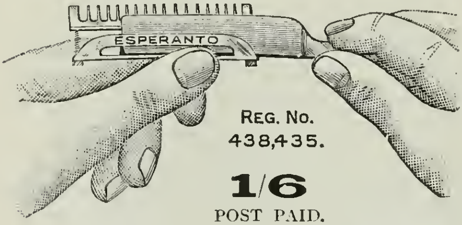

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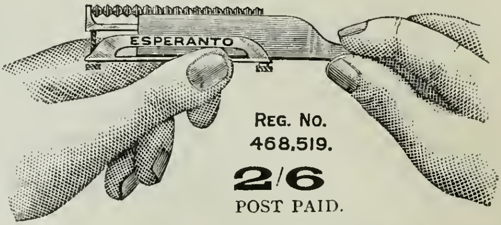

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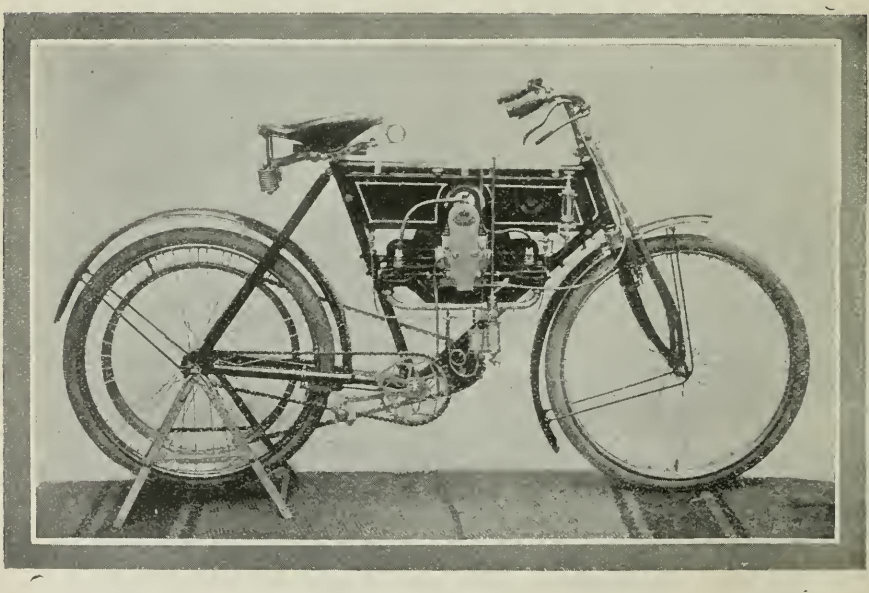

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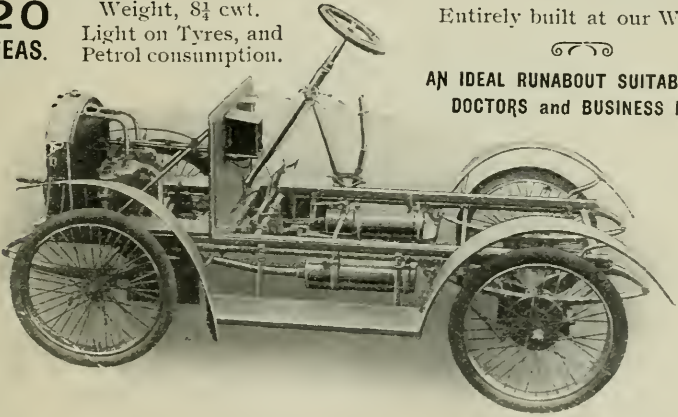

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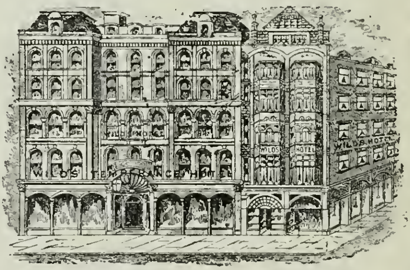

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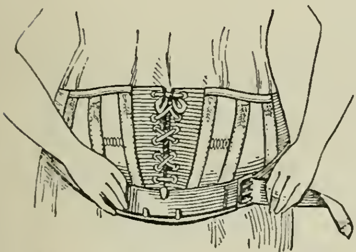

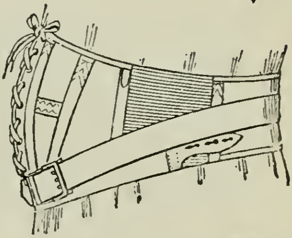

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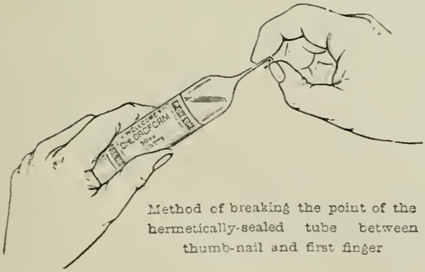
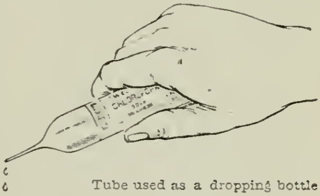


Method of breaking the point of the hermetically-sealed tube between thumb-nail and first finger



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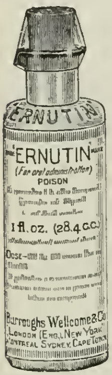

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MEDICAL ANNUAL:

A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX

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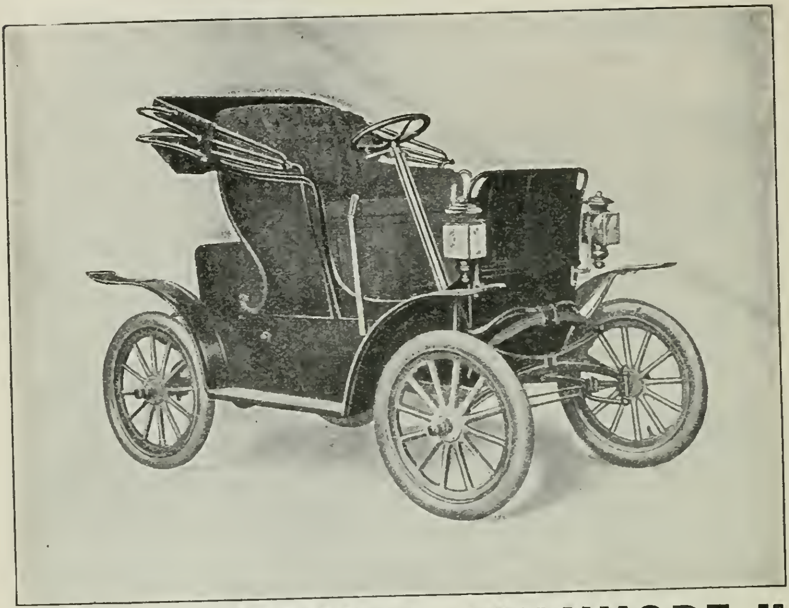

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PREFACE.

Our twenty-sixth volume of the *Medical Annual* affords evidence of the enormous amount of practical and progressive work which is being accomplished by our profession.

The physician is cultivating methods which render our knowledge of the patient's condition greater and more accurate than it was before. The examination of the blood and the arterial pressure, the determination of the opsonic index, and the microscopic examination of the fæces are amongst the new methods by which exact observation is rendered possible, and therapeutic measures can be prescribed and their results ascertained with something approaching mathematical precision.

The therapeutist recognizes more fully that "symptoms of disease" frequently represent the resistance of the organism to the attack upon its vitality. Instead of pursuing the quest for rapid palliatives, his attention is more directed towards those agents which will excite the vital functions to resist the special form of attack to which it is subjected. Thus artificial inflammation in its primary and modified form (Bier's method) has become one of the most valuable agents we possess for shortening the process of inflammation.

The difference between the reaction of the healthy human body and the tuberculous subject when tuberculin is applied to the eye or the abraded skin, bids fair to become a method of diagnosis of great importance, besides throwing light upon therapeutic problems.

The surgeon is steadily improving the technique and lessening the danger of operations, and accumulated experience of the newer operations enables him to advise the practitioner as to the class of cases and the conditions likely to yield the most favourable results. Thus, Should the prostate be removed, or not ? is now capable of a definite answer, and this volume supplies it.

We have, in fact, done our best to give the fullest information respecting the newer methods, and to bring those who are developing them into direct communication with our readers.

There are some diseases which have not come under discussion during the year, and in order that reference to them may not be fruitless we have, under their headings, given short paragraphs containing the most recent information available.

We should like to feel that the *Annual* is never consulted in vain. This is our ideal. We can at least claim that between its covers there is crowded a vast amount of information which cannot fail to be useful to those who read and refer to it.

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THE MEDICAL ANNUAL.

Part I.—The Dictionary of Materia Medica and Therapeutics.

REVIEW OF THERAPEUTIC PROGRESS, 1907,

BY

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GENERAL REVIEW.

The past year has not been conspicuous for any great advance in therapeutics. No drug likely to prove of permanent value has been brought forward. At one time the enthusiastic reports about the value of atoxyl in early syphilis suggested that this drug might possibly prove a useful addition to our antisyphilitic remedies. The drug had already been tried in syphilis without success; but recently, after large doses had been found useful in various forms of protozoal disease, it was suggested by French writers that possibly it might give equally good results in syphilis if pushed to the limit of tolerance. As atoxyl is a dangerous drug, liable at any moment to produce severe toxic symptoms, the use of heroic doses could only be justified if the therapeutic activity was very pronounced. The first series of reports seemed to indicate this, but the later reports are by no means so favourable. One of the most recent writers, Nobl,[1] has come to the most unfavourable conclusion after an exhaustive trial of atoxyl in early cases of syphilis. He finds that the prolonged local application of the drug to the initial lesion in no degree delays either the onset or severity of the secondary symptoms. On excising the initial chancres, he found that at the end of the treatment numerous living spirochætes were present. Similarly, the use of atoxyl subcutaneously did not cause satisfactory clearing up of the secondary symptoms. As his experiments appear to have been carefully carried out, it seems likely that atoxyl will not remain long in vogue as an antisyphilitic remedy.

A number of very interesting records of the use of trypsin and diastatic ferments in the treatment of malignant tumours have been published. The results recorded are both interesting and curious, but obviously great care must be exercised in interpreting the value of the records.

In serum therapy it should be noted that the use of an antitoxic serum for dysentery seems to be finding genuine support. The reports so far have been highly flattering. The search for a reliable serum preparation for the treatment of tuberculosis is still occupying the attention of several of our best authorities. Behring's new preparation has been reported on by too few observers to enable one to pass any verdict, but some of the older preparations have been extensively tried, and those who have employed them write in glowing terms of the value of such treatment.

REFERENCE.—[1]*Wien. klin. Woch.* 1907, No. 44.

DICTIONARY OF REMEDIES.

ADRENALIN.

Choksy[1] finds that adrenalin, whether given by the mouth or subcutaneous tissue, exerts a beneficial effect upon the heart in **Plague.** The dose is 20 to 30 min. of adrenalin solution mixed with saline solution. This was repeated every two hours for four or five days. By subcutaneous injection better results are obtained, giving a dose of 20 min. of adrenalin every two hours or 200 min. in the twenty-four hours.

The external use of adrenalin in **Neuralgia, Neuritis,** and **Reflex** or **Referred Pain** is advocated by Henry Guy Carleton,[2] a layman, who has obtained reports of over 500 cases treated by physicians with this method. The treatment consists in applying small quantities of 1–1000 adrenalin ointment externally over the nerve involved. The quantity of the ointment to be used in any affection of a peripheral nerve should not exceed from one to two minims by inunction, except in the case of the sciatic nerve, when two or three minims may be used. In neural cases the administration of adrenalin by the mouth or hypodermically is useless. The use of the ointment does not cause ischæmia of the part, since the amount of adrenalin necessary to influence the vasomotor nerves is much greater than that contained in this small quantity of ointment. Neither is the relief of pain due simply to a local anæsthetic influence, since tactile sensation is not affected. Carleton suggests that regeneration of neural energy is one of the normal functions of the suprarenal secretion. The application of the ointment is almost invariably successful in cases of functional neuralgia and neuritis, e.g., in neuralgia of the fifth nerve, intercostal nerves, and sacral plexus, herpes zoster, lumbago, neuritis of the sciatic nerve and the palmar and plantar nerves, and in post-operative neuromata, etc. Reflex neuralgias were rapidly relieved. The most common types are those depending on eye-strain and dental caries. In such cases the first application of the ointment frequently gives almost immediate relief, which lasts for from several hours to months, and then there comes a violent recurrence, which can only be temporarily relieved. Transferred pains are easily affected by the ointment. Lastly, the pains of gout, articular and muscular rheumatism, and myalgia are relieved almost entirely by external applications of adrenalin. On the other hand, the treatment is quite ineffectual in neuralgias arising from toxic conditions such as malaria, diabetes, lead poisoning, or intestinal toxæmia : or in cases of pain dependent on reflex traumatic influence or inflammation involving a branch of the same nerve. Lastly, pain depending on a degeneration of the central nervous system, as in locomotor ataxia, is not amenable to the adrenalin treatment, while the pain of adiposis dolorosa is very refractory.

Ferguson[3] recommends the use of adrenalin in small, frequently repeated doses in cases of **Rattlesnake-Bite,** along with local incisions and use of strong permanganate solution. The adrenalin should be injected in frequently repeated doses till the physiological effects are produced, and sufficient then given to maintain this effect.

Vassale[1] recommends the use of rectal injections of a preparation of the suprarenal glands in cases of **Lead Colic.**

Massaglia[5] found suprarenal preparations of use in the uncontrollable **Vomiting of Pregnancy** and in cases of **Seasickness.**

Tanturri[6] reports a severe case of **Osteomalacia** in which daily injections of ½ cc. of 1–1000 solution of adrenalin produced rapid cure.

It is well known that the intravenous application of suprarenal preparation produces changes in the walls of the aorta. The lesions produced are somewhat different from those seen in arteriosclerosis, and depend probably upon a direct toxic effect upon the muscle fibres. D'Amato[7] has succeeded in demonstrating similar lesions in the myocardium and in the muscular tissues of the intestine. The intestinal lesions are most liable to be produced if the drug (paraglandin) was administered by the mouth. The changes are obtained even if the amount of suprarenal preparation is not sufficient to produce any alteration of blood-pressure. The effect of administration of iodine in various forms upon the lesions has been studied by numerous observers. Koranyi[8] found that the simultaneous use of iodipin injections in large measure prevented the development of the changes in media. Boveri and Cummius[9] and Storch[10] found that the same thing held true for potassium iodide. but this is denied by Loeb and Fleischer,[11] while Klieneberger[12] found that neither iodoform nor potassium iodide had any effect in preventing the development of the lesions.

REFERENCES.—[1]*Ind. Med. Gaz.* Feb. 1907 ; [2]*Ther. Gaz.* May, 1907 ; [3]*Texas Med. News*, Nov. 1906, in *Ther. Gaz.* Feb. 1907 ; [4]*Il Policl.* Jan. 1907 ; [5]*Ibid.* ; [6]*Centr. f. Gyn.* 1907, No. 34 ; [7]*Berl. klin. Woch.* 1906, Nos. 33–34 ; [8]*Deut. med. Woch.* 1907, No. 17 ; [9]*Ibid.* 1906, No. 22 ; [10]*Univ. of Penns. Med. Bull.* July, 1906 ; [11]*Ibid.* 1907, No. 10 ; [12]*Centr. f. inn. Med.* 1907, No. 11.

ADRENALIN (Synthetic).

A series of aminoketones have been produced synthetically which show the qualities of adrenalin but are less active. By the introduction of two atoms of hydrogen, amino-alcohols are found which are more active. Biberfeld[1] has investigated some of these latter bodies. He states that the dimethylamino-alcohol and ethylamino-alcohol have no marked vasoconstrictor influence, but the methylamino-alcohol is a very active body, giving the same clinical effect as adrenalin. Another substance, amino-alcohol, is less toxic for rabbits, but shows the same effect as adrenalin upon the peripheral arteries.

A number of chemical substances have been produced synthetically by the Höchst Manufacturing Company, which have an action upon the blood-pressure and vessels similar to suprarenin. Their actions, however, differ as regards toxicity and some other properties. Of the total series only three were found to be efficient substitutes for adrenal preparations. These are dioxyphenylæthanolamin (arterenin), æthylaminoacetobenzcatechin (homorenin), and the acetate of dioxyphenylæthanolmethylamin (synthetic adrenalin). The toxicity of arterenin is about half that of suprarenin, but it is almost as active as a vasoconstrictor. Homorenin is much weaker, a 5 per cent solution representing the activity of 1–1000 suprarenin. The third preparation, synthetic suprarenin, tested on animals gave exactly similar results to the organic suprarenin. Braun[2] tested the three preparations clinically, and found that both arterenin and synthetic suprarenin were efficient substitutes for ordinary suprarenin as far as their local action was concerned. On account of its lower toxic action he gave the preference to arterenin. Hoffmann[3] has tested all three. He used arterenin for local anæsthetic purposes combined with novocain, and found that the onset and duration of the anæsthesia did not differ from that obtained by combining suprarenin and novocain, but the local vasoconstricting action was rather less marked than with corresponding doses of suprarenin. Homorenin did not prove so satisfactory. It is much less active, and requires to be used in stronger concentration. Further, when it is sterilized it seems to lose part of its efficacy. In man it produced symptoms of toxic action when injected into the spinal canal, though the toxic effect was not so marked when it was used subcutaneously. Synthetic suprarenin is, in his opinion, the best substitute for suprarenin. He has used it in some 250 cases of local anæsthesia, and found that in combination with novocain it was a perfect substitute for corresponding quantities of suprarenin. Its action is rather more intense, so that three drops of the synthetic preparation can be used for five of the organic suprarenin. Its power of producing local anæmia is greater than that of the older preparation. It also possessed to a marked degree the power of raising the arterial blood-pressure. No unpleasant side-effects were observed. A distinct advantage is that the synthetic preparation is more stable. Exposed to light it does not alter in colour so quickly as ordinary suprarenin does, while it can be boiled for ten minutes without losing its activity.

REFERENCES.—[1]*Med. Klin.* 1906, No. 45; [2]*Local Anæsthesia*, 2nd Ed. 1907; [3]*Münch. med. Woch.* 1907, No. 4.

ALCOHOL.

Raphael[1] warmly recommends *external applications* of alcohol in various forms of septic disease. He has used them with success in **Appendicitis, Tuberculous Peritonitis,** and in **Phlegmonous Inflammation** of the tendon sheaths and subcutaneous tissue. His most striking result was obtained in two cases of **Perforation** and **Peritonitis** in typhoid fever, both of which recovered under the alcohol treatment. The alcohol, 90 to 96 per cent, is applied as compresses of cotton-wool, which are covered with a layer of impervious material. The compress is kept continuously moist with alcohol, and is not removed unless the skin shows signs of irritation. In some cases the alcohol was continuously applied for several weeks, e.g., in tuberculous peritonitis. In the cases of appendicitis the treatment lasted from two to six weeks. The effect of the compresses was shown in relief of pain and lowering of temperature and pulse-rate, while the pus discharged becomes thicker and less fluid.

The use of *local injections* of alcohol in the treatment of obstinate **Sciatica** and **Neuralgia** has been warmly recommended by Schlösser and other writers. Fischler[2] points out that this form of treatment, though very efficacious in certain cases, is not without danger. He reports several cases in which the injections were followed by paralysis of the nerve, with reaction of degeneration, which lasted for long periods before it began to clear up. He, therefore, states that alcohol injections should not be used in the treatment of neuralgic affections of mixed nerves, but should be restricted to the removal of pain in sensory nerves, such as the supra-orbital and infra-orbital branches of the fifth nerve.

REFERENCES.—[1]*Ther. Monats.* Sept. 1906; [2]*Münch. med. Woch.* 1907, No. 32.

ANTIPYRIN.

Fletcher[1] finds antipyrin a valuable remedy in various disorders of infancy. In **Whooping-Cough,** in doses of 1 to 3 gr. four to six times daily, it markedly relieves the two cardinal symptoms of cough and vomiting. It is a valuable sedative in certain cases of **Gastro-Intestinal Irritation** and **Nervous Irritability,** which frequently accompany teething. In **Night Terrors** and **Enuresis** it gives quick relief in 2-gr. doses thrice a day.

REFERENCE.—[1]*Pract.* April, 1907.

ANTITHYROIDIN.

Elsner and Wiseman[1] have been favourably impressed with the action of this drug in **Exophthalmic Goitre.** None of their cases were harmed by its use, and a number reacted promptly to the treatment. They are positive that it can relieve the annoying and distressing symptoms of some cases. The greatest improvement is found in the relief of tachycardia, precordial distress, and tremor, especially if the treatment is combined with rest in bed and close attention to diet. Improvement in some of the symptoms is likely to take place within three to seven days. If there is no improvement within a month there is not much use in prolonging the treatment. In their experience the most rebellious symptom is the exophthalmos. Most patients put on weight and are anxious to continue the use of the drug, which they feel does them good.

Mayer[2] reports a case of exophthalmic goitre in which very severe symptoms rapidly disappeared under the use of small doses of Moebius' antithyroidin serum. He used small doses of ten drops thrice daily, gradually rising by five drops each day till eighty drops thrice daily were given. Distinct improvement was obtained in four days.

Korschun and Iwanoff[3] found the blood-serum and milk of thyroidectomied animals of great benefit in a series of five cases of exophthalmic goitre.

Perlsee[4] recommends the administration of one or two tablets of antithyroidin daily in the treatment of irregular bleeding at the menopause.

REFERENCES.—[1]*Ther. Gaz.* Oct. 15, 1906; [2]*Münch. med. Woch.* Dec. 4, 1906; [3]*Charkow Med. Jour.* 1906, Bd. 1, Heft 2; [4]*Prag. med. Woch.* 1907, No. 24.

ARISTOLOCHIA CYMBIFERA.

Under the name guaco this plant is largely used in Mexico as a remedy for snake-bite. Butte[1] has tested this claim, but finds that guaco is quite useless. It contains a bitter substance, guacol, an active resinous body, which is a powerful **Analgesic**, retards nutrition, and lowers temperature. He recommends it in painful **Neuralgia**.

[The name "guaco" is given to a large number of plants of the genera Mikania and Aristolochia, but it is to the Mikania guaco that the name properly belongs. According to Guibourt, the medicine used in France under the name was composed almost entirely of three or four species of Aristolochia. It has been used with some success in the paroxysm of **Gout**. The root of *Aristolochia rotunda* is one of the ingredients of the "Portland powder."[2]]

REFERENCES.—[1]*Comptes Rend.* Dec. 17, 1906, in *Lancet*, 26 Jan. 1907 [2]*United States Dispensatory*, pp. 1937 and 1811.

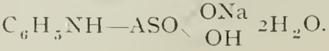
ASPIRIN.

Maier[1] recommends aspirin in puerperal sepsis. He gives small doses, 4 gr. every two hours.

REFERENCE.—[1]*Münch. med. Woch.* 1907, No. 29.

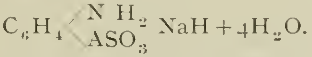
ATOXYL.

Considerable doubt seems still to exist regarding the exact chemical nature of this organic arsenic compound. According to Fourneau[1] it is not the anilide of meta-arsenic acid, as was at first supposed. The correct description is the monosodic salt of the anilide of ortho-arsenic acid. It contains 29·10 per cent of arsenic, and not 37·69 per cent, as was originally claimed. The formula suggested is



$$C_6H_5NH{-}ASO\Big\langle{}^{ONa}_{OH}\;2H_2O.$$

In its turn this formula has been criticized by Ehrlich and Bertheim, who state that the arsenic is not fixed to the amidogen group (NH_2), but to the benzine nucleus. Consequently they hold that instead of being the sodium salt of an anilide, it is the sodium salt of a true arsenical derivative having the formula



$$C_6H_4 \begin{array}{l} \diagup NH_2 \\ \diagdown ASO_3 \end{array} NaH + 4H_2O.$$

In any case it seems certain that atoxyl is identical with the substance discovered by Béchamp in 1863 on heating the arseniate of aniline. The content of arsenic is the same, and the difference with regard to the proportion of water of crystallization probably means that different observers have used specimens dried at different temperatures. It is said that all commercial samples of atoxyl obtained by crystallization from a watery solution contain five molecules of water of crystallization.

Since Koch's recommendation of this substance in the treatment of sleeping-sickness, a good deal of experimental work has been done to test the value of the drug. Uhlenhuth, Gross, and Bickel[2] have tested it against the dourine disease of horses, which is caused by a trypanosome. Rats and mice infected with blood from horses affected with dourine rapidly succumb to a general blood infection, but this can be prevented by injections of atoxyl. The same treatment has proved successful in another form of protozoa infection, viz., the spirillosis of hens.

Nierenstein[3] discusses the treatment of **Trypanosomiasis**, and states that very promising results have been obtained in trypanosomiasis in rats by combining atoxyl and mercury. This combined treatment gives more permanent results than the use of atoxyl alone. It is found that atoxyl accumulates in the body, and toxic symptoms may arise after the drug has been stopped for a week. To some extent the toxicity seems to be reduced by acetylating the atoxyl. He refers to some experiments in which, after treatment with atoxyl, the trypanosomes reappeared in the blood. Strains obtained from such animals after the relapse are sometimes more virulent. This is of importance when large numbers of patients are segregated to undergo treatment, as reinfection from a patient who had had a relapse might be more serious. In sleeping sickness he recommends the use of atoxyl and mercury on the following routine plan: 1 cc. of a 20 per cent solution of atoxyl should be given daily for one week, followed by 1 cc. of a 1 per cent solution of perchloride of mercury four times. This treatment should be continued for a long time.

Babes and Vasiliu[4] find that atoxyl gives remarkably good results in **Pellagra**, a disease which is epidemic in Roumania and depends upon the use of diseased maize. Subcutaneous injection of small quantities of atoxyl produces almost immediate improvement, and gives much better results than any form of treatment hitherto employed. Ten cgrams of atoxyl are injected into the subcutaneous tissue: at the end of a week this dose is repeated; and at the third week it is raised to 20 cgrams, which is repeated at intervals of four days till

1 gram in all has been given. Slight cases required only 10 cgrams every week.

According to Fusco and Hallopeau[5], atoxyl gives excellent results in **Malaria.** The former author recommends that it should be injected in doses of ½ cc. of a 10 per cent solution two hours before the paroxysm is due.

After the effect of atoxyl in cases of protozoal infection had been demonstrated. it was natural that its effect in **Syphilis** should be investigated. Lassar, in 1902, found it of no use in small doses. Paul Salmon[6] found that the rapid introduction of 22 gr. did not kill off the specific germ, though that amount had been found efficient in cases of sleeping-sickness. He therefore increased his dosage, and obtained excellent results in syphilis. Since then Lassar[7] has re-investigated the drug, using this larger dosage, and finds atoxyl effectual. Similarly Hallopeau[8] got good results. In an exhaustive paper, based on 120 cases, he states that anilarsenite of soda exerts a marked therapeutic action on syphilitic processes. Its most marked effect is upon the primary and secondary manifestations. Gummata clear up readily, but it is of much less use against mixed secondary infections where other organisms are present, as in condylomata and suppurating sores. In cases of parasyphilitic manifestations it is useless, e.g., leukoplakia lingualis, hemiplegia syphilitica, and probably also in tabes and general paralysis. Unpleasant side-effects are common, and the drug must be carefully used. The common manifestations of intolerance are gastro-intestinal pain, vomiting, nausea, general malaise, and aching in the limbs, often with difficulty in passing urine. A more serious and permanent injury is sudden blindness. Generally these symptoms pass off if the drug is stopped, and by regulating the dose carefully they can as a rule be kept within bounds. The drug should not be given to old people or those of very small build, or those suffering from organic disease of the kidneys or heart, as they seem to be susceptible to its action. As the drug seems to accumulate in the system, the first two doses should be larger than the succeeding ones. The onset of toxic symptoms is often very sudden, and this seems to indicate that the drug breaks up into poisonous products after a variable time. A more stable compound is desirable. The drug is relatively rapidly excreted, and no trace is found in the urine after it has been stopped for fifteen days. Now that the therapeutic efficacy of atoxyl has been thoroughly established, Hallopeau recommends that it should be administered along with mercury and iodide treatment. It is used as a 10 per cent solution freshly prepared for injection into the gluteal region. Three injections a week each of 7½ gr. (50 cgrams) are given, till six injections in all have been given. After this a pause is made for fifteen days, when a second series may be given, provided the urine is free from the drug.

Moses[8] treated a series of nineteen cases of recent syphilis with atoxyl, and then stopped it in view of two cases of blindness reported by Lesser as the result of atoxyl treatment. Of the cases treated by Moses, five were cured by atoxyl alone, and seven were improved when the treatment was stopped, while in four cases the drug had to be given up on account of complications resulting from its administration. In only seven of the cases was there entire absence of side-effect. He states that there is no doubt that atoxyl is an active remedy, but in view of the manifold toxic symptoms it must be used with caution. It may be used in cases where for any reason it is impossible to employ the ordinary antisyphilitic remedies, but in such cases he advocates the use of small doses, and that the total quantity should not exceed 3 to 3·5 grams.

According to Spielmeyer[9], atoxyl is of little value in the treatment of the paralytic manifestations of syphilis, though possibly it may ultimately prove to possess some prophylactic value in preventing the onset of parasyphilitic manifestations.

Waterman[10] has found absolutely no therapeutic action in cases of optic nerve lesions depending upon central syphilitic lesions or those occurring in the course of locomotor ataxia. In several of the cases the optic atrophy seemed if anything to be accelerated by the use of atoxyl, with rapid diminution in visual acuity. On account of his unfavourable experiences he warns his fellow-practitioners against the use of atoxyl in such conditions.

The value of atoxyl in **Tuberculosis** is doubtful. Rénon and Delille[11] found that guinea-pigs treated with atoxyl succumbed as readily to tuberculosis as control animals which received no atoxyl. In cases of chronic pulmonary tuberculosis no effect was obtained, but atoxyl seems to have a slight action in delaying the spread of the disease in acute phthisis and in tuberculous pleurisy and peritonitis. On the other hand, Lafay[12] considered atoxyl almost a specific for tuberculosis. He gives it in pill form or by subcutaneous injections, using a 5 to 10 per cent solution and injecting every fifth day a quantity corresponding to 0·2 cgram, gradually increasing till a maximum of 0·8 cgram. is reached, which is continued for some weeks and then is gradually reduced.

Glaubermann[13] has noted the action of atoxyl in **Relapsing Fever.** He finds that with small doses (3 to 8 cc. of a 20 per cent solution in the course of six to eleven days) no beneficial action is obtained. Using larger doses better results were noted. Thus, if 9 to 23 cc. of the 20 per cent solution was used in the course of seven to fourteen days, the subsequent course of the disease was materially altered. A large proportion of patients thus treated did not develop a second attack of fever, and those that did had very much shorter attacks. On an average the second attack lasted only forty-eight hours as against eighty-eight hours without treatment.

REFERENCES.—[1]*Bull. Gén. de Thérap.* July 8, 1907 ; [2]*Deut. med. Woch.* 1907, No. 4; [3]*Lancet*, July 27, 1907 ; [4]*Berl. klin. Woch.* 1907, No. 28 ; [5]*Gaz. d. Hôp.* July 23, 1907 ; [6]*Berl. klin. Woch.* 1907, No. 22 ; [7]*Bull. d. l'Acad. de Méd.* June 4, 1907 ; [8]*Berl. klin. Woch.* 1907, No. 29 ; [9]*Ibid.* July 1, 1907 ; [10]*Ibid.* No. 35 ; [11]*Bull. Méd.* 1907, No. 44 ; [12]*La Clin.* May, 1907, in *Brit. Med. Jour.* July 13, 1907 ; [13]*Berl. klin. Woch.* 1907, No. 36.

BENZOSALIN.

This combination of benzoic and salicylic acid is stated by Freund[1] to be superior to other salicyl preparations in cases of **Irritable Stomach** and **Weak Heart.** Bodenstein[2] confirms these statements, and says that with doses of 2 to 4 grams daily he has never observed any unpleasant side-effect.

References.—[1]*Deut. med. Woch.* 1907, No. 10; [2]*Berl. klin. Woch.* 1907, No. 14.

BICARBONATE OF SODA.

Meunier[1] thinks that the use of sodium bicarbonate in **Gastric Pain** and **Hyperacidity** is wrong. It is usually stated to act by neutralizing free hydrochloric acid, which irritates the empty stomach walls. But in a series of sixteen cases Meunier found that the pain was at its height at a time when there was a minimum of hydrochloric acid in the stomach. The bicarbonate relieved the pain, but this he thinks must have been due to the liberation of CO_2, and not to its direct neutralizing effect. Therefore he holds that it is wrong to give bicarbonate alone, as it must depend for its good effect upon the quantity of acid present in the stomach, while excess of the salt, by rendering the gastric contents alkaline, will interfere with digestion. He suggests that it is more rational to give a mixture of tartaric acid and a mixture of carbonates of such a nature that the CO_2 will be slowly elaborated and the acidity of the stomach not reduced. He uses the substances separately in powder form, giving tartaric acid 15 gr. in one, and sodium bicarbonate 6 gr., calcium carbonate 4½ gr., and hydrated magnesium carbonate 3 gr., in the other. These are incorporated in separate portions of water, half a glass for each. When the pain comes on, alternate tablespoonfuls of the alkaline and acid mixtures are taken, which give greater relief than the alkaline draught alone. He thinks that under these conditions the CO_2 acts as a sedative and causes more rapid evacuation of the stomach.

Reference.—[1]*Bull. d. Sc. Pharmacol.* Oct. 1906, in *Lancet*, Jan. 19, 1907.

BILE.

The fluid bile of various animals—e.g., ox, rabbit—has a bacteriolytic effect upon the pneumococcus and *Streptococcus mucosus.* Other forms of streptococci are not affected. The bile retains this power even if it has been heated to 100° C. The bile salts do not possess this property to the same degree. Mandelbaum[1] found that taurocholate of sodium renders the organisms invisible to the naked eye, but they are still capable of staining faintly with methylene blue.

Barbier and Cruet[2] recommend the use of dried bile in a condition which occurs in infants and points to **Insufficient Hepatic Activity.** The symptoms are pallor, loss of appetite, and wasting, with enlargement of the liver and signs of a general intoxication. The infants are constipated, and the stools are large and bulky, very fœtid, and deficient in colour. The writers administer the dried bile dissolved in milk. One powder of 7½ gr. is given night and morning. As the result of this treatment, in from four to eight days the stools take on a healthy colour, and the fœtid odour disappears. The pasty consistence takes longer to pass off, as it depends upon malutilization of the fats. The bile regulates the movements of the bowel, which become regular. The influence upon the general health is shown by improvement in strength and increase in weight, but the treatment requires to be continued for a prolonged period.

References.—[1]*Münch. med. Woch.* 1907. No. 29; [2]*Bull. Gén. de Thér.* July 8, 1907.

BIOSON.

Marx[1] describes this casein preparation as the best and cheapest of its type. It is a fine powder, of pleasant taste, and is soluble in warm fluids. Absolutely unirritating, it is easily digested, and even its prolonged use for months does not produce disturbance of digestion. It does not affect the teeth. By stimulating the appetite it is of use in **Weakness** and **Exhaustion.** The drug can be used to make up any deficiency in albuminous nourishment in various conditions. It is useful in disturbance of the gastro-intestinal tract, in **Neurasthenia,** convalescence, lung diseases, children's diseases, and **Chlorosis.** It can be administered by the ordinary methods, or by the rectum.

Reference.—[1]*Ther. Monats.* 1906, No. 12.

BISMUTH.

In examining the outline of the stomach by X rays, large doses of bismuth are used, and occasionally poisonous symptoms have been noticed. The symptoms are very similar in such cases, and though alarming they are not dangerous. In one to four hours the patients complained of nausea, or even vomited, especially if they had partaken of food. They became markedly cyanotic, and were considerably prostrated. The pulse was quick and full, and the respiration rapid. These phenomena lasted several hours. In one case they developed after 2 oz. had been used as an enema and allowed to remain in the bowel. The bismuth subnitrate used was chemically pure and free from contamination with arsenic or antimony. It has been suggested that the symptoms are similar to those caused by excessive quantities of drugs of the nitrite group, and as the majority of the cases were instances of abnormal conditions of the stomach, it is possible that under such conditions a nitrite may be formed in sufficient quantity to cause toxic symptoms. It seems advisable, therefore, to remove as much of the bismuth salt as possible by washing out the stomach after the X-ray examination is completed, or using an enema and purge in colon cases.

Reference.—[1]*Univ. Pennsyl. Med. Bull.* Aug. 1906, in *Ther. Gaz.* Dec. 1906.

BOROVERTIN.

Mankiewicz[1] describes a new **Urinary Antiseptic** which possesses certain advantages over the other hexamethylenetetramin compounds, urotropin, hetralin, and helmitol. None of these can be depended upon, in cases of very alkaline urine, to split off free formaldehyde, upon which their action depends. Various attempts have been made to produce a compound of hexamethylenetetramin which will acidify the urine. Boric acid forms with this base definite, fairly stable, crystalline salts, soluble in water. The most suitable one to use in therapeutics is borovertin, the triborate of hexamethylenetetramin. It contains 68·4 per cent of boric acid in the form of hypoboric acid, HBO_2, which if split off in the presence of water forms boric acid, H_3BO_3. In doses of 60 gr. spread over the twenty-four hours borovertin is therapeutically active, causing alkaline urine to become acid, while at the same time the hexamethylenetetramin exerts its antiseptic action, being split up into free formaldehyde. The excretion of hexamethylenetetramin is rapid. It can be obtained in the urine in fifteen minutes. The urine after borovertin possesses all the characteristics of urotropin urine, and can be kept for several days without showing any growths. Borovertin has been tried in over one hundred cases, and proved active in cases where urotropin failed to give any result. It is not always successful in gonorrhœal cystitis, in tuberculosis of the kidney or bladder, or in cases of pyelitis or renal calculus, but even in these cases it gives some relief. Occasionally it causes lack of appetite, or even vomiting, so that it is well to commence with small doses of 15 to 30 gr. in the twenty-four hours, and increase this amount to 60 gr. if it is well borne.

REFERENCE.—[1] *Berl. klin. Woch.* Dec. 3, 1906.

CACTUS GRANDIFLORUS.

The therapeutic value of this drug has been investigated by Sayre[1], as one of a sub-committee appointed by those superintending the revision of the United States Pharmacopœia. He reported to this committee that it was not suitable for inclusion in the U.S.P., as it has almost no physiological action. The supply of reliable material is uncertain, and the manufacture of suitable preparations is difficult, as the drug rapidly deteriorates.

REFERENCE.—[1] *Ther. Gaz.* Dec. 1906.

CALCIUM SALTS.

Silvestri[1] recommends these salts in cases of **Epilepsy** and **Eclampsia,** as in many instances there is a deficiency of lime and feeble coagulability of the blood. He finds the calcium salts give capital results in epilepsy, and especially in young people. It is more easy to continue the use of calcium salts for prolonged periods than the bromides.

Netter[2] has obtained excellent results with calcium chloride in **Tetany, Laryngismus Stridulus,** and **Infantile Convulsions.** It exerts a marked calming influence in these conditions. The drug, however, has the drawback that in excessive doses the calming influence is replaced by an inverse action. It is therefore wise to commence with small doses. For children under two years of age the daily dose should vary from 2½ to 20 or 30 gr.

REFERENCES.—[1] *Gaz. deg. Osped.* Jan. 6, 1907 ; [2] *Comptes Rend. de la Soc. de Biol.* Mar. 15, 1907, in *Pract.* Aug. 1906.

CALOMEL.

Nemser[1], using intestinal fistulæ in dogs and test-tube experiments, comes to the conclusion that calomel is not affected by the acids of the stomach or converted into perchloride of mercury or other soluble form. The solution of calomel begins in the duodenum, and probably the pancreatic secretion is the most important factor in causing solution. The absorption takes place not higher than the ileum. The soluble substances found are either absorbed in the large intestine or precipitated there by the sulphides, since the fæces contain no soluble mercury. Nemser does not state in what form the calomel is absorbed.

REFERENCE.—[1] *Zeits. f. physiolog. Chem.* Sept. 6, 1906, in *N. Y. Med. Jour.* Oct. 13, 1906.

CHLORETONE.

Wynter[1] finds this drug a useful **Sedative** in cases of **Gastric Pain,** such as gastritis, ulcer, cancer, and gastrodynia, and in the pain and vomiting of **Chlorosis.** He uses 5-gr. doses administered in petroleum emulsion. In 10-gr. doses it has a hypnotic effect. The combined sedative action upon the stomach and brain renders it useful in sea-sickness. For short journeys 5 gr. are sufficient taken a quarter of an hour before embarking. Recently he has tested the drug in **Chorea,** and finds it very valuable. For children between the ages of seven and twelve years, the administration of 3 gr. in ½ oz. of petroleum emulsion thrice daily for two or three days so markedly reduced the choreic movements that the dose could be halved, and the movements ceased altogether in about nine days. In two cases out of fourteen treated thus, an exfoliation of the skin of the heels and hands was noted.

REFERENCE.—[1] *Lancet,* Mar. 30, 1907.

CHOLESTEARIN.

Almagia and Mendes[1] put upon record two cases of **Tetanus** which were successfully treated by injections of cholestearin. They were led to apply this treatment by the results obtained in experiments on animals. In the one case 1·5 gram of cholestearin was injected daily for fifteen days, and in the second case 17 grams were used during the course of nineteen days.

REFERENCE.—[1] *Münch. med. Woch.* Sept. 3, 1907.

CITARIN.

Schneider[1] recommends the use of this drug in 15-gr. doses at two-hour intervals in persistent **Headache** dependent upon a gouty diathesis. He has never had occasion to repeat the dose more than three times.

Salacz[2], from an experience of three years, warmly recommends citarin in large doses in cases of acute and chronic **Gout.** Even in very obstinate cases he has obtained good results, provided large enough doses are given. He gives 30 gr. as an individual dose.

dissolved in a mineral water. This dose is repeated from six to eight times in the day till relief is obtained, whereupon it is gradually diminished. The only unpleasant action observed with these large doses is diarrhœa, which may be so profuse as to necessitate the interruption of the cure for a couple of days.

References.—[1]*Prag. med. Woch.* 1907, No. 26; [2]*Allgem. Wien med. Ztg.* 1907, No. 29.

CITRATE OF SODA.

Lacheny[1] recommends this drug in cases of **Dyspepsia** in which the pain or vomiting comes on three or four hours after food. He gives 20 gr. in a tablespoonful of water when the discomfort commences, and repeats the dose every four minutes till the symptoms pass off. As a rule two or three doses are sufficient to achieve this purpose.

Reference.—[1]*Thèse de Paris*, Nov. 1906.

COCAINE.

Einhorn[1] states that the following prescription represents Tucker's remedy, and is useful in **Asthma** as a spray:—

R	Cocaine Nitrate	1·028 %	Glycerin	32·16 %
	Atropine Nitrite	0·581 %	Water	60·23 %

Reference.—[1]*Münch. med. Woch.* 1907, No. 27.

DIGALEN.

Contrary to the statement of Cloetta, Fränkel[1] finds that digalen has a cumulative action, and that it does not differ in this respect from the other bodies of the digitalis group.

Vliel[2] finds that Cloetta's digalen is in no way superior to other digitalis preparations when administered by the mouth. On the other hand, he found it very satisfactory when injected directly into a vein. In these cases it often gives marked and prompt relief of a permanent nature. The dose varies from 1 to 5 cc. He states that the intravenous use of digalen is a very valuable method of treating **Cardiac Weakness.** A special advantage is that it can be used in **Acute Infectious Disease,** such as pneumonia, before the crisis.

Kottmann has had considerable experience with intravenous injections of digalen. At one time he advocated large doses, and has given as much as 15 cc. of the digalen solution in a single dose. In a recent paper,[3] he has altered his opinion, and now emphatically states that the initial dose should never exceed 1 cc. If necessary this can be repeated at several hours' interval two or three times in the day. In exceptional cases it may be advisable to raise the dose to 1½ or even 2 cc., but in all instances where no result is obtained with this dose it should be remembered that there is the possibility that the therapeutic indication has been wrongly interpreted, and that the case is probably not a suitable one for the drug.

References.—[1]*Arch. f. exper. Path. u. Pharm.* 1907, p. 121; [2]*Münch. med. Woch.* 1906, No. 44; [3]*Cor.-Blatt. f. Schweiz. Aerzte*, 1907, No. 10.

ERGOTOXINE.

This is a new alkaloidal substance which has been isolated from ergot. Its chemical characters are described by Barger and Carr[1] as follows. It is a white, amorphous powder having the composition $C_{35}H_{41}O_6N_5$, and melting with decomposition at 162° to 164°. It is freely soluble in most organic solvents, but only feebly so in ether, and is insoluble in light petroleum. A feeble, monacid base, it forms crystalline salts. It is closely related to the crystalline alkaloid, ergotinine, described by Tancred, which may be considered as the anhydride of ergotoxine. The one form is readily converted into the other. The main differences are that ergotinine crystallizes very readily, but forms amorphous salts. It is slightly soluble in cold alcohol. On the other hand ergotoxine is very soluble in cold alcohol and forms crystalline salts. Experiments in anæsthetized or decerebrate animals showed that the salts of ergotoxine induced a marked pressor influence upon the circulation, so that the blood-pressure rose, while a subsequent administration of adrenalin caused, instead of a further rise, a transient fall. The action upon the circulation is peripheral and not central. Ergotoxine has little action on the heart. It produces no convulsive action in frogs, but induces a peculiar muscular condition in which the animal becomes very easily fatigued. In the pregnant cat ergotoxine produces a tonic contraction of the uterus. Ergotoxine, given by a method which ensures slow absorption, causes gangrene in the wattles of a cock's comb. In various animals it produces nervous symptoms: ataxia, dyspnœa, and salivation. As the pharmacopœial preparations of ergot only contain very small quantities of this alkaloid, probably some other active principle is present in them.

REFERENCE.—[1] *Bio.-Chem. Jour.* vol. ii. 1907, Nos. 5 and 6.

ESTONE.

Estone and formestone are salts of aluminium. Estone is a basic acetate, of the formula $Al(OH)\ (C_2H_3O_2)$,^{2} while formestone is a formic acetate $(Al(OH)HCO_2)\ (C_2H_3O_2)$. Both occur as fine, dry, white powders, slowly soluble in water and unaffected by exposure to air and light. They do not stain linen. In contact with water or fluids containing water, pus, blood, etc., they decompose slowly, acting as antiseptics and astringents, corresponding in their effect to the acetate of aluminium, but without exerting any irritant action. Diluted with talc or starch (1–10), they may be used as dusting powders for application to open wounds or to restrict excessive sweating. Similarly they may be used with lanolin or petroleum as a base.

REFERENCE.—[1] *Pharmaceut. Ztg.* 1907, p. 407.

EUPHORBIUM (Resin of).

The resin of euphorbium finely emulsified produces **Local Anæmia** when injected into the tissues. Périères[1] recommends its use for this purpose in gynæcological conditions. Thus in **Fibroma of the Uterus** injections into the cervix stop hæmorrhage and cause the fibroid tissue to cease growing and ultimately to disappear.

REFERENCE.—[1] *Acad. d. Sci.* Dec. 24, 1906, in *Lancet*, Jan. 19, 1907.

FIBROLYSIN. (*See* THIOSINAMINE.)

FORMALDEHYDE.

Wilcox[1] recommends the use of ammonia to neutralize the fumes of formaldehyde after a room has been fumigated with the latter substance. Unless neutralized, the odour of formaldehyde hangs about the room for some time and prevents its use as a dwelling-place. All odour can be removed in a few minutes by sprinkling ammonia over the rugs and bedding and then closing the room for half an hour Any surplus ammonia can be readily disposed of by ventilating the room.

M'Clintic[2] has specially investigated the disinfectant properties of formaldehyde with reference to railway sleeping-cars. He finds that formaldehyde is a reliable disinfectant for smooth substances, but is deficient in penetrating power. It acts best in a high temperature, especially if the air is moist. In dry, cool air it is almost worthless. A very convenient and effective method of setting the gas free is to pour the 40 per cent watery solution of formaldehyde upon crystals of potassium permanganate in the proportion of 100 cc. of the solution to 50 grams of the salt. Evolution of the gas begins in a few seconds.

According to Higley[3], the best method of evolving formaldehyde gas is by means of lime. The bactericidal effect thus obtained was more certain than by any other method. Houghton[4] discusses the permanganate method, and shows that it is capable of liberating 33⅓ per cent, as against 38 per cent by the autoclave method. With the potassium method a vigorous reaction takes place within a minute, causing strong ebullition of the liquid, with production of sufficient heat to liberate a large volume of formaldehyde gas and water vapour. The boiling continues for six minutes, and then gradually ceases. It is attended with considerable foaming and spattering. To avoid this he recommends the use of briquettes made with potassium permanganate and 15 per cent of Portland cement, with sufficient water.

REFERENCES.—[1]*N.Y. Med. Jour.* Mar. 23, 1907 ; [2]*Ibid.* Nov. 24, 1906 [3]*Med. Rec.* Oct. 20, 1906 ; [4]*Ther. Gaz.* July, 1907.

FORMIC ACID.

This substance, under various forms, has been recommended for preserving fruit and meat, but according to the researches carried out in the Berlin Institute for Infectious Diseases it is rather a dangerous blood-poison, which leads to the development of methæmoglobin. Small doses continued over a long period have a cumulative effect, and exert the same effect upon the blood.

REFERENCE.—[1]*Zeits. f. Hyg. u. Infektionsk.* Bd. 56, s. 387.

GELATIN.

Alessandro[1] recommends rectal injections of gelatin in cases of **Dysentery** and **Enterocolitis.** He has found it useful in mucous colitis. In acute cases of dysentery he administered 2 grams of gelatin every six hours, using a large Nélaton catheter.

Mann[2] advocates the administration of gelatin by the mouth in all forms of **Intestinal Bleeding.** With this treatment he has obtained uniformly good results. The solution he uses is made by boiling gelatin, 20 grams, in water for six hours, bringing the solution up to 180 cc. The solution remains fluid, and when cold is filtered. Two grams of citric acid are then added. The dose is one or two teaspoonfuls every two hours.

REFERENCES.—[1]*Il Policl.* Oct. 28, 1906; [2]*Münch. med. Woch.* 1907, No. 1.

HÆMATOPAN.

Clemm[1] considers this new iron preparation an improvement upon hæmatogen, as it is in crystalline form, and keeps indefinitely. Hæmatopan is prepared by drying *in vacuo* a mixture of defibrinated blood and malt. During the process the hæmoglobin and serum albumin form easily soluble combinations with the sugar, as they are transformed into saccharates.

REFERENCE.—[1]*Berl. klin. Woch.* Aug. 19, 1907.

HEROIN.

Duhem[1] states that heroin is apt to produce a drug habit very readily, and that this habit is more dangerous than that of morphia. **Heroinomania** frequently follows the use of the drug for relieving the spasms of asthma, for gastric or other pain, and from the substitution of heroin for morphia when breaking patients from the morphia habit. In treating heroinomania he advocates gradually cutting off the supply of the drug, but great care is necessary, and the patient must be constantly watched lest a fatal syncope or stoppage of breathing come on. The onset of such a catastrophe may be very insidious, and a patient quietly sleeping may, without any obvious disturbance, cease to breathe. To restore respiration in such cases, injection of morphia is more advantageous than heroin.

REFERENCE.—[1]*Progrès Méd.* Feb. 29, 1907.

HUMAN GASTRIC JUICE.

Within recent years several attempts have been made to utilize the gastric secretion of lower animals (dogs and pigs) in treating gastric affections. The results have not been satisfactory, and most authorities have given up the use of these preparations. Rosenberg[1] points out that if such treatment is at all indicated, it is much better to use the gastric juice of man than that of animals. In cases of gastrosuccurrhœa, a plentiful supply of gastric juice is obtainable, as in this condition there is a continuous secretion of gastric juice irrespective of the taking of food. In a case under his care, a patient for weeks gave 200 to 600 cc. of clear juice daily of high acidity—94 to 115 cc. of decinormal NaOH, of which 12 to 15 cc. was combined acid, and some was due to acid phosphate, while on the average about 90 per cent represented free HCl. The proteolytic power was so marked that small cubes of albumin were completely digested at blood-heat in two hours.

With this physiologically active juice several cases of deficient hydrochloric secretion were treated, but no definite results were obtained, though for four weeks one to two teaspoonfuls were administered four times a day ten minutes before food. Though the appetite as a rule improved, there was no alteration in motility or chymifying power of the stomach.

REFERENCE.—[1]*Münch. med. Woch.* June 25, 1907.

IODINE.

Maberly[1] recommends iodine as an **Antidote to Carbolic Acid.** The peculiar numbness and bleaching of the fingers produced by exposure to carbolic solutions is removed by rinsing the hands in a basin of warm water to which a little tincture of iodine has been added. Iodine forms with carbolic acid a chemical compound, which is apparently harmless. The effect on the tongue or skin can be easily tested by applying a little strong solution of carbolic acid, and neutralizing with a solution of iodine as soon as the typical phenol effect is produced. The effect of the neutralization is almost immediate as regards sensation. Maberly has tried iodine internally in three cases of carbolic poisoning, with good results. He gives 5 min. of the tincture of iodine dissolved in a teaspoonful of water, repeating the application at four hourly intervals.

REFERENCE.—[1]*Lancet*, Aug. 3, 1907.

IODOFAN.

This is a reddish-yellow, crystalline powder without odour or taste. Its chemical constitution is represented by the formula $C_6H_3I(OH_2)HCOH$. Its action depends upon the fact that in contact with the secretions of the body, pus, etc., it splits off iodoformol. Piorkowski[1] has shown that iodofan exerts a powerful **Antibacterial Action,** and after a short period is an efficient **Deodorant.**

REFERENCE.—[1]*Berl. klin. Woch.* 1907, No. 20.

ISOFORM.

This preparation, paraiodanisol, has been largely recommended as a substitute for iodoform. Urbantschitsch[1] points out that though as a rule it is quite a safe drug, it should not be used for individuals with a markedly nervous disposition, as in a few cases it has caused convulsions. Isoform acts upon the blood as a hæmolyzing agent, so that it cannot be applied to a bleeding wound. It is well also not to use it on a very extended wounded area. Lastly, it should never be given internally, as the hæmolytic action seems to be intensified by absorption from the gastro-intestinal tract. Necrotic areas in the liver, spleen, and kidney have been known to result from its oral administration.

REFERENCE.—[1]*Wien. klin. Runds.* Feb. 1907.

KHOSAM.

Khosam is a small fruit obtained in China, Straits Settlements, Java, and Australia. It is identical with *Brucea antidysenterica* of Abyssinia. From the kernel of the fruit a bitter oil is obtained which contains a glucoside, khosamin. In small doses it is a **Cholagogue** and **Cathartic**, and is slightly antimicrobic. It has been much used in Java as a remedy for **Dysentery**, being given in 10-gr. doses of the dried powdered seed, either by the mouth or rectum.[1]

REFERENCE.—[1]*La Clin.* Aug. 3, 1906, in *Brit. Med. Jour.* Oct. 27, 1906.

KOLA NUT.

Chevrotier and Vigne[1] have found that in dried kola nuts the therapeutic activity does not correspond to that of the fresh nut. The latter contains no free caffeine, but as the result of a very active ferment, caffeine is liberated in the presence of air. Consequently the dried nut exerts its action chiefly through the caffeine which it contains. In the fresh nut the action upon nerves and muscles is much greater than that produced by caffeine. They have elaborated a procedure by which the ferment is killed, so that it is possible to have a dried powder of the nut which retains all the active properties of the fresh nut.

REFERENCE.—[1]*Congr. d'Hyg. Aliment. Paris*, Oct. 1906.

KOUSSO.

Reeb[1] has isolated three substances from kousso, one of which is inactive. This body is readily obtained from the leaves. By the use of a solution of chloral hydrate and sodium carbonate he obtained an active amorphous substance, of a brick-yellow colour, melting at 65° C. Further, after extraction with chloral hydrate, another substance is left which is physiologically active. It is brick-red in colour, and melts at 72° C.

REFERENCE.—[1]*Les Nouv. Rem.* Mar. 24, 1907, in *N.Y. Med. Jour.* May 11.

LIVER.

According to Von Leyden and Bergell[1], the liver contains a proteolytic ferment which is of use in **Cancer** and malignant tumours. Its action upon cancerous products and cancer cells is much more vigorous than that of trypsin.

REFERENCE.—[1]*Deut. med. Woch.* 1907, No. 23.

LUMBAR ANÆSTHESIA.

Quite a number of cases of **Ocular Paralysis** following lumbar anæsthesia have been reported in the past year. With the exception of one case of oculomotor paralysis, all are instances of abductor paralysis. The paralysis comes on several days after the injection. In a series of 400 injections four cases were observed, three after the use of stovaine and one after tropococaine. All the patients complained of headache, sleeplessness, and pains in the back. The ocular paralysis may come on even if the anæsthesia was imperfect. Ach[1] holds that the paralysis is not produced by a toxic action upon the nuclei in the fourth ventricle, but is due to a direct toxic action upon the nerve trunk as it passes through the cerebrospinal fluid. To prevent accidents he recommends that tropococaine should be used, and that stovaine should be avoided as specially dangerous. Further, as small doses of the anæsthetics should be used as possible, and the use of concentrated solutions avoided. Immediately after the operation the patient should remain quietly on his back, with the upper part of the body raised.

Reference.—[1]*Münch. med. Woch.* 1907, No. 13.

LUPULIN.

Stern[1] finds lupulin a valuable drug in functional diseases of the **Stomach and Intestines.** It alleviates pain and regulates the contractions. It can be given alone in 3- to 7- gr. doses, or combined with other drugs, e.g., silver nitrate, iron and quinine, etc. Even its prolonged use does not develop a craving, and therefore it is of great use in relieving painful conditions in chronic gastro-intestinal affections.

Reference.—[1]*Med. Rec.* Sept. 22, 1906.

LYSANE.

This is a new **Antiseptic,** obtained by the action of formic aldehyde upon certain terpenes or analogous derivatives, e.g., eucalyptol, menthol, eugenol. The substance obtained is dissolved in alcohol and then separated. Lysane is miscible in all proportions with water, alcohol, or glycerin, forming clear solutions. Their odour is pleasant, and they keep for an indefinite time. Lysane does not attack or corrode steel instruments. In the proportion of ½ to 1 per cent it may be used as a dressing for wounds. To sterilize instruments 1 per cent is sufficient, while a solution of 1 to 3 per cent is suitable for preparing the hands for operation work[1].

Reference.—[1]*Apothek. Ztg.* 1907, p. 259.

LYSARGIN.

This is a new colloidal preparation of silver, which is stated by Weissmann[1] to be superior to collargol. He has tested it in a series of sixty cases depending upon **Injuries, Auto-intoxication,** specific **Infectious Diseases,** as measles, scarlatina, pneumonia, and in various septic conditions, with almost uniformly good results. Intravenous injections had the advantage over those made with collargol that lysargin did not cause rigors or other unpleasant side-effects. To obtain good results in infectious conditions it is necessary to use lysargin early in the course of the disease. The drug has no true bactericidal action, but possesses to a marked degree the property of inhibiting growth of bacteria. This, combined with its catalyptic power, and the fact that it produces a leucocytosis, probably account for its therapeutic effect. He uses the drug as a 10 per cent ointment, and in the form of a 5 per cent solution for injection into the veins. In the latter case the dose varies from 4 to 7 cc. of the solution.

Reference.—[1]*Ther. Monats.* 1907, No. 5.

MAGNESIUM SULPHATE.

Tucker[1] finds that local application of a saturated watery solution of magnesium sulphate relieves **Local Pain.** He has used it in numerous cases of **Epididymitis** and **Orchitis** and in **Gonorrhœal Rheumatism.** The solution is applied over the painful part on gauze, which is kept saturated by renewals every half-hour. At the end of twenty-four hours the gauze is removed, and the parts are washed with water. If necessary, the application can be repeated. The superficial structures appear markedly blanched, but this is not followed by any deleterious effect.

Franke[2] has treated a case of **Tetanus** with intradural injections of magnesium sulphate as advocated by Meltzer. The disease occurred in a man aged 32 years. At intervals of four or five days 1 cc. of a 25 per cent solution of magnesium sulphate was injected into the spinal canal. The effect of each injection was shown by prompt subsidence of spasm, lowering of temperature, and improvement in the general condition. The symptoms returned again in the course of two days, but always in a milder form, and eventually ceased altogether. Franke holds that the treatment is purely symptomatic, but the removal of spasm gives the tissues the opportunity of recovering from the exhaustion produced by the former spasms.

REFERENCES.—[1]*Ther. Gaz.* April, 1907; [2]*Centr. f. inn. Med.* 1907, No. 14.

MENTHOL.

Amblard[1] prefers menthol to cocaine for relieving **Gastric Pain,** as it is less toxic. Menthol, by its anæsthetizing properties, relieves pain and checks vomiting. It has an antiseptic action, and probably produces a hyperæmia of the gastric mucous membrane. He recommends its use in **Dyspepsia** due to disturbed functioning and not to organic lesions. It gives good results in the dyspepsia of chlorosis and of phthisis, in the stomach disturbances in neurasthenia, in gastric crises of tabes, and in **Vomiting of Pregnancy.** In ulcerated conditions menthol relieves pain, and never leads to hæmorrhage. He administers it in small doses in cachets with sugar of milk. From 1 to 3 gr. can be given in the day, but it is well to commence with doses of $\frac{1}{3}$ gr.

REFERENCE.—[1]*Jour. d. Prat.* Dec. 1, 1906.

MERCURIC BROMIDE.

This salt, $HgBr_2$, has been used by Dalimier[1] as a means of introducing mercury into the system. He points out that it is a neutral salt which is not irritating to the tissues and is readily absorbed. In a series of sixteen cases in which he used it, it proved as active therapeutically as the biniodide of mercury. He employs the following formula:—

℞	Mercuric Bromide	1·08	Water	100
	Sodium Bromide	1·04		

of which 1 to 2 cc. is injected into the muscular tissue.

Désesquelle[2] and Lafay[3] point out that the bibromide of mercury has already been used in Russia in the treatment of **Syphilis.** Lafay states that in preference to sodium bromide the chloride of sodium should be used to effect solution, as the double salt formed with the chloride is more stable than that formed with the bromide of sodium.

Leredde[4] has used mercuric bromide in a number of cases of syphilis, and finds that it causes less pain on injection than other mercurial preparations, while it gives equally good therapeutic results. He points out that it affects steel needles, and that for injection an iridium platinum needle is required.

REFERENCES.—[1]*Bull. Méd.* 1907, No. 44; [2]*Bull. Gén. de Thér.* July 16, 1907; [3]*Ibid.*; [4]*Ibid.* July 30, 1907.

MERGAL.

Mergal is a compound of cholic acid and oxide of mercury. This acid was chosen as likely to be suitable since after oral administration the chief store of mercury is found to be the liver. To prevent any irritating action upon the bowel some tannate of albumin is added to the preparation, which is used clinically in the form of soft gelatin capsules containing one part of cholate of mercury and two of tannate of albumin The mercury is rapidly absorbed, and its excretion can be shown in the urine in twenty-four hours. The absorption seems to be fairly constant, and leads to an accumulation in the body, but all the mercury is excreted within eighteen to thirty days after ceasing to take mergal. Keil Boss[1] and Gross[2] speak highly of its efficacy in the treatment of **Syphilis.**

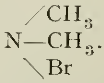
REFERENCES.—[1]*Med. Klin.* No. 30, 1906; [2]*Fortschrit. d. Med.* 1907, No. 16.

MESENTERIC GLANDS.

Schwerdt[1] has used with success cœliacin, a preparation of the dried mesenteric glands of the sheep, in cases of **Scleroderma.** The treatment requires to be kept up for long periods.

REFERENCE.—[1]*Münch. med. Woch.* 1907, No. 25.

METHYLATROPINUM BROMATUM.

This is a methylized bromide of atropine,  $\mathrm{N}\begin{smallmatrix}\diagup \mathrm{CH_3}\\ \text{—}\mathrm{CH_3}\\ \diagdown \mathrm{Br}\end{smallmatrix}$. It contains 20·84 per cent of bromine, and forms white, crystalline scales, which are soluble in water and diluted alcohol. Its toxic action is less marked than that of atropine sulphate. It has less effect upon the heart and respiration, which are affected only at a late stage of the action. It does not produce any atropine delirium except after very large doses. Its action is as great upon the intestinal paralysis as other atropine salts, but the effect in checking glandular secretion is less evident. In a solution of ½ to 1 per cent it has been used by various writers to dilate the pupil. The **Mydriatic** action is much more quickly obtained than with atropine, and there is an absence of any toxic effect. Hudovernig[1] has used the drug in a number of diseases, and finds that the internal administration rapidly relieves pain of various kinds. It is very effective in the shooting pains of **Locomotor Ataxia** and in **Tabetic Crises.** Its administration in irritation of the spinal nerve-roots in meningeal conditions and in **Headaches** of all kinds was attended with prompt relief of the pain. He also used it with effect in **Painful Hysterical Conditions,** and in **Neuralgia**, when it proved not only sedative but curative. In epilepsy it had very little effect, and none at all in paralysis agitans and in muscular twitching. The patients do not seem to become rapidly accustomed to the drug, and in a series of thirty-seven cases no toxic manifestation was observed. The doses usually varied from 1 to 4 mgrams, and the drug can be given with other remedies.

Boesl[2] records a case in which the injection of $\frac{1}{5}$ mgram ($\frac{1}{300}$ gr.) of methyl atropine bromate promptly checked a severe attack of **Convulsions** in a child two years of age.

REFERENCES.—[1]*Berl. klin. Woch.* 1906, No. 42 ; [2]*Münch. med. Woch.* Sept. 10, 1907.

MIGROPHEN.

This substance, a combination of quinine and lecithin, is warmly recommended by Hallstein[1] in **Headache** of various types. Using it in doses of 3 to 7 gr. he obtained prompt relief in anæmic, hysterical, and neurasthenic cases, but it was less reliable in headache due to gastro-intestinal disturbance.

REFERENCE.—[1]*Ther. Monats.* Oct. 1906.

MILK.

Solt[1] recommends rectal injections of milk as a **Hæmostatic** in cases of severe bleeding. He has used this treatment with good effect in cases of bleeding from the stomach, lungs, and bladder, and finds it of great value in **Post-partum Hæmorrhage.** The quantity used is $\frac{1}{2}$ to 1 litre, and for some time an injection should be given daily. He has no clear notion how this treatment acts, but possibly it may be due to the calcium salts which milk contains.

Coleman[2], on the contrary, finds that milk has no effect upon the coagulation of the blood, whether it is used as an article of diet or given as a hypodermic injection.

REFERENCES.—[1]*Ther. Monats.* Oct. 1906 ; [2]*Biochem. Jour.* April 4, 1907.

MISTLETOE.

Gaultier[1] recommends an ethereal extract of mistletoe in the treatment of **Hæmoptysis.** He administers it in the form of pills containing 13 gr. of the extract. In seven out of eight cases the bleeding was checked promptly. The drug is said to act by reducing arterial tension.

REFERENCE.—[1]*Progrès Méd.* July 21, 1906.

MONOTAL.

Monotal is a methylglycol acid ester of guaiacol which is said to present certain advantages over guaiacol. The objections to the use of the latter depend upon its character as a phenol body, which explains its tendency to irritate the skin and cause necrosis when applied externally. Monotal is described by Impens[1] as a colourless oil, fairly soluble in olive oil but only slightly so in water. It saponifies readily even in the presence of weak alkalies. It is fairly well absorbed after application to the skin, as Impens was able to recover 7·4 per cent of the amount rubbed in, in the form of ethereal sulphates in the urine. When pure guaiacol is used, double this quantity can be thus recovered.

Hecht[2] found that monotal exerted a powerful antiphlogistic action in **Erysipelas,** muscular and articular **Rheumatism, Neuralgia, Orchitis,** etc., while it also exerted an antipyretic action. Müller[3] has also tested the drug clinically, and comes to the conclusion that it is the best external remedy to apply in neuralgic pain, but of no value in that depending purely upon a rheumatic basis. It is extremely valuable in relieving the pains of **Pleurisy** and **Tuberculosis,** but does not seem to affect the course of the tuberculous disease.

References.—[1]*Ther. Monats.* Feb. 1907; [2]*Heilkunde,* Jahrg. xi. Heft 1; [3]*Allgm. Med. Centr. Ztg.* 1907, No. 26.

MORPHIA.

Magnus[1] discusses the production of constipation by morphia. It is usually held that the constipation results from an action on the splanchnic nerve, but Magnus finds that this is not true for cats, dogs, and rabbits, since constipation can still be produced by morphia after all the connections of the sympathetic system with the gut are separated distal to the ganglia and the nerves have degenerated. The expulsive power of the great intestine is not affected by morphia, as it reacts to enemata in exactly the same fashion, and to the same bulk of fluid, as before the administration of morphia. By mixing bismuth with the food he showed that the food remained a very long time in the stomach after the administration of morphia, and that it leaves the stomach in a much more perfectly digested form than under normal conditions. Consequently, it is much less stimulating to the duodenum, and this fact, he thinks, is the chief factor in producing the constipation.

Reference.—[1]*Münch. med. Woch.* July 16, 1907.

NOVASPIRIN.

This name is given to a new compound in which salicylic acid is combined with methylene citric acid as the disalicylic acid ester of methylene citric acid. It is claimed that this drug is an improved form of aspirin, in which the salicylic acid is combined with acetic acid. It is a powder of not unpleasant taste, and is almost insoluble in water. It is not absorbed from the stomach, but in contact with alkaline intestinal secretions it readily splits up into its component parts. A number of writers have tested the drug, and in their reports there is general agreement that its action corresponds closely to that of aspirin, but that it is slightly less marked and more slowly produced. Witthauer[1] found that even in cases of marked gastric hyperacidity the new drug is well borne. It has a very marked pain-relieving action in **Influenza**, but it is not so active as other salicyl compounds for reducing temperature and alleviating the pains of neuralgia.

Ruhemann[2] studied the absorption and excretion of novaspirin. It is less rapidly absorbed than aspirin, and ninety minutes elapse before the salicyl reaction can be obtained in the urine. On the other hand, excretion is more gradual, being at its height twenty-eight to forty hours after a 10-gr. dose. This seems to indicate that the drug is slowly broken up in the tissues. The pain-relieving effect of novaspirin takes longer to develop than that of aspirin, and rather larger doses are indicated. It causes less sweating, and does not irritate the kidneys, upset the digestion, or depress the heart. This milder action makes it very suitable for treating children, or those suffering from old-standing **Disease of the Middle Ear.**

Liebman's[3] report is almost identical with that of Witthauer. He finds it almost a specific for influenza, but not of much good in neuralgia. It is a perfect substitute for aspirin in cases of **Rheumatic Fever.** On the other hand, Reichmann[4], while praising the non-irritating properties of the drug on the stomach, states that it is a less powerful antipyretic and pain-reliever in rheumatic fever. According to Lehmann[5] the drug exerts a marked action in calming the nerves and lessening pain, and he recommends its use in **Dysmenorrhœa.** Merkel's[6] report is of similar tenour. He finds novaspirin a useful sedative in gynæcological conditions, e.g. pain of **Cancer,** peritoneal distress from old **Gonorrhœic Adhesions,** and in dysmenorrhœa of young girls. It acts promptly in relieving the **After-pains of Childbirth.** Floret[7] and Dengel have found it useful in **Gout** in doses of 30 gr. three or four times a day.

REFERENCES.—[1]*Berl. klin. Woch.* 1907, No. 3; [2]*Med. Klin.* 1907, No. 5; [3]*Wien. klin. Woch.* 1907, No. 7; [4]*Aertz'. Praxis*, 1907, No. 7; [5]*Deut. med. Woch.* 1907, No. 10; [6]*Münch. med. Woch.* 1907, No. 27; [7]*Deut. med. Ztg.* 1907, No. 17; [8]*Med. Klin.* 1907, No. 17.

OLIVE LEAVES.

The fresh leaves of the olive plant contain a bitter substance which possesses a definite medicinal value as a **Febrifuge** and **Antiperiodic.** In smaller doses it is a tonic. The leaves may be prescribed in the form of a tincture, made by exhausting 4 oz. with 1 pint of 60 per cent alcohol. Of this 15 to 30 min. may be given as a tonic. At one time olive leaves were used as a substitute for quinine in cases of fever and ague.[1]

REFERENCE.—[1]*Pharm. Jour.* Oct. 6, 1906.

OVARIAN EXTRACT.

Llewellyn[1] holds that there is an antagonism between the internal secretions of the ovary or testicle and the thyroid gland, so that the secretions of the ovary or testicle are the main agents in the neutralization of the thyroid secretion in the body during the reproductive period of life. He is of the opinion that **Exophthalmic Goitre** is a thyroid intoxication dependent on deficiency of the ovarian internal secretion.

In support of this view he records three cases of exophthalmic goitre in which the oral administration of ovarian substance in doses of 5 gr. twice daily produced prompt improvement in general health. The pulse-rate fell in all cases, and the goitre diminished, while there was marked increase in weight. The goitre and the exophthalmos did not disappear completely in any of the cases. Two of them showed a return of symptoms on stopping the ovarian medication.

REFERENCE.—[1]*Austral. Med. Gaz.* May 20, 1907.

OVOGAL.

This is a new preparation, in which the bile acids obtained from fresh ox-bile are combined with albumin. It is a greenish-yellow, almost tasteless, powder, with a faint odour reminiscent of bile. Observations carried out on dogs and on a woman with a biliary fistula showed that the drug increases the quantity of bile. Wörner[1] found that the administration of ovogal relieved the distress in cases of **Diseased Conditions of the Gall-bladder.** Rahn[2] found it useful in ½ to 1 teaspoonful doses in cases of **Biliary Colic** and in various intestinal conditions due to deficient biliary secretion in **Chronic Constipation** and **Sluggish Liver.** For regulating the bowels it proved very satisfactory, and in a couple of cases of **Jaundice** from duodenal catarrh rapid relief was obtained, and the urine became normal sooner than was to be expected, while subjective symptoms of itching, nausea, and depression passed off.

REFERENCES.—[1]*Med. Klin.* 1906, No. 21; [2]*Münch. med. Woch.* 1907, No. 10.

OXYGEN.

Schulze[1] recommends injections of gaseous oxygen in **Tuberculous Peritonitis.** The fluid is removed by tapping, and immediately the flow stops, oxygen is injected till the abdominal distention corresponds to that previous to the removal of the fluid. This procedure causes little disturbance to the patient. In a few cases there are symptoms of slight irritation of the peritoneum, shown by diarrhœa or vomiting. Within eight days or so the oxygen is absorbed, and with it the fluid exudate disappears. The results are fairly permanent, and, of a series of seven cases, six were able to work at their ordinary occupations eighteen to twenty-four months after the treatment. He suggests that the oxygen acts either by irritating the peritoneum, thus producing hyperæmia, or possibly by altering in some fashion either the chemical nature of the exudate or the resistance of the tubercle bacilli.

REFERENCE.—*Mitteil. a. d. Grenzgeb. d. Med. u. Chir.* 1907, vol. xviii. H. 1.

OXYGEN BATHS.

The addition of borate of manganese to a solution of sodium perborate gives rise to the liberation of free oxygen in the form of small bubbles for a period of about fifteen minutes. Laquer[1] has used oxygen baths of this description, and compares them with CO_2 baths. The oxygen bath is on the whole a milder stimulant. The pulse-rate is distinctly diminished and the blood-pressure falls, but the cutaneous stimulation is less with the oxygen bath. He advocates its use in cases of **Nervous Sleeplessness, Neurasthenic** and **Tabetic Paræsthesia of the Skin,** and in **Nervous Tachycardia.**

REFERENCE.—[1]*Deut. med. Woch.* 1907, No. 1.

PAPAIN.

Branch[1] reports a few cases in which the interstitial injection of papain was followed by marked local benefit in cases of **Inoperable Cancer.** Under local anæsthesia a freshly-made emulsion of papain containing 1 gr. in 5 min. of cold water was injected. The dose varied from 5 to 20 min. of the emulsion. Following the injection there is a burning sensation, lasting for about half-an-hour. Later, a curious sensation, as if some small animal was nibbling at the part comes on, and lasts for a day or two. The tumour softens round the site of puncture in two or three days ; there is then a slight rise of temperature. In about ten days, on an average, the tumour begins to discharge copiously through a small opening a thick greenish or greyish matter. In all the cases this occurred sooner or later. The discharge ceases after one or more weeks, and at its cessation the tumour is found to have disappeared, or to have become notably smaller. With the presence of the discharge the temperature subsides, and remains about normal as long as it continues. In some cases the discharge does not come on after the first or second injection, but even in these cases the tumour is more or less diminished. The effect of the injections seems to be local, but they can remove recurrent manifestations of scirrhus as effectually as if they had been cut out by a scalpel. Thus by their aid the external developments of recurring cancer can be controlled if the patients come for treatment at the first appearance of new nodules.

REFERENCE.—[1]*Brit. Med. Jour.* Jan. 19, 1907.

PITUITARY BODY.

An important contribution to our knowledge of this gland has been made by Schaefer and Herring[1]. Working with a watery extract of the ox gland, they found that it is a very active substance. Only the posterior lobe confers this activity. The anterior lobe is of a glandular structure, while the posterior lobe is of neuro-ectodermic origin, and resembles in structure the grey matter of the brain, containing glia cells and perhaps a few nerve cells and fibres. The dried posterior lobe retains its active properties for months, or even years. An extract made by boiling with one hundred parts of Ringer's solution produces a marked rise of blood-pressure with constriction of the arterioles. It has been found that one large dose confers immunity to a subsequent dose for thirty to sixty minutes, and that subsequent doses may even induce a fall of pressure, indicating the presence possibly of two antagonistic substances exerting a pressor and depressor influence. Thus to some extent the pituitary extract resembles suprarenal extract, but its action is more prolonged, and it does not stimulate all glandular and muscular tissues innervated by the sympathetic. The most striking difference is in their action upon the kidney, for adrenalin causes constriction of the vessels and cessation of urinary flow, but pituitary extract induces a great flow of urine with dilatation of the vessels, due apparently to a direct action upon the kidney of a possible third constituent of the gland, as a second and third dose have the same diuretic effect, though the effect upon the circulation may be depressant. Further, the urinary flow persists for a long time after the general vascular effect has passed off, and in some cases there is a marked interval before the injection causes the urine to flow. In favour of this view is the fact that treatment with peroxide of hydrogen renders inert the substance acting on the blood-vessels, but does not destroy the diuretic agent. Reducing agents have no influence upon any of the activities of the extract. The other glands of the body are not affected, and the action seems to be a specific one upon the kidneys. The authors conclude that the extract is a more powerful **Diuretic** than any in the pharmacopœia, as it produces a specific stimulation of the kidney and induces an optimum condition of circulation for promoting diuresis, and that its chief purpose is auxiliary to the functions of the kidneys.

Rénon and Delille[2] find that the administration of dried pituitary gland in doses of 5 to 7 gr. raises the blood-pressure in cases of **Infectious Disease,** notably in typhoid fever. It also acted well in purulent pleurisy, but had no great effect in pneumonia or broncho-pneumonic infections. In cases of cerebrospinal fever they found a marked improvement in the circulation without any effect upon the general condition.

Rénon and Azam[3] report temporary improvement in a patient suffering from exophthalmic goitre after the use of dried pituitary gland. The tachycardia gradually ceases, and the goitre is slightly reduced or remains stationary.

References.—[1]*Trans. Roy. Soc.*. Series B. 1906, in *Lancet,* Feb. 2, 1907; [2]*Progrès Méd.* May 18, 1907; [3]*Ibid.* June 1, 1907.

PROTARGOL.

Müller[1] warmly recommends a protargol ointment in the treatment of **Wounds.** According to his experience the wounds heal up readily, and the resulting cicatrix is less marked than with other methods. The drug is used in the form of a 5 to 10 per cent ointment, which must be carefully prepared as follows: The protargol is dissolved in a little cold water; this solution is then incorporated with anhydrous lanolin and reduced to the required proportion by the addition of vaselin. After it is kept for some time the ointment is apt to discolour from the deposition of metallic silver, but this apparently does not affect its therapeutic activity.

From time to time complaints are made that protargol injections are painful. Stern[2] has carefully investigated this point in a series of

160 cases of gonorrhœa, and comes to the conclusion that properly prepared solutions cause no irritation. He asserts, however, that it is essential that the solution be made with cold water, and that it be freshly prepared.

References.—[1]*Berl. klin. Woch.* 1907, No. 11; [2]*Deut. med. Woch.* 1907, No. 6.

PYRAMIDON.

According to Fuchs,[1] this drug is a valuable **Analgesic** in **Dental Practice.** He finds that the violent pain which follows the application of arsenious acid to destroy the pulp of a tooth rapidly yields to a dose of 6 gr. of pyramidon. He uses it to overcome the pain which frequently follows the extraction of a tooth, and finds it more suitable for this purpose than all other remedies that he has tried. In the case of women and children a dose of 6 gr., for men 7½ gr., causes the pain to disappear in ten to twenty minutes, and the relief lasts for four or five hours.

Reference.—[1]*Bull. Gén. de Thér.* June 23, 1907.

QUININE.

Goodman[1] reports a case in which the administration of quinine sulphate in 9-gr. doses was followed some hours afterwards by intense headache, nausea, and fever. Similar cases have been reported by Italian writers, but no satisfactory explanation is given how the fever is produced. All the patients had previously suffered from malaria, and many had enlarged spleens, and it was suggested that perhaps the symptoms may be due to the drug causing the spleen to contract. Goodman does not accept this explanation, and holds that it is more plausible to expect the solution of the phenomena to be due to some chemical changes in the blood acting on the heat-dissipating centres in people who have, or have had, malaria.

Reference.—[1]*Med. Rec.* Dec. 1, 1906.

SAJODIN.

Anacker[1] has studied the absorption and excretion of this iodine preparation. He finds that when given on an empty stomach the drug is comparatively slowly absorbed, but the period of excretion is not long. If, however, the drug is given half an hour after a full meal the absorption is rapid, but the excretion is very prolonged. A liberal supply of starchy food delays the absorption, but alcohol increases the rate of excretion and tends to promote iodism. In a series of sixty-seven cases treated with sajodin, Anacker found that it was therapeutically active in **Syphilitic Conditions,** and presented certain advantages over the ordinary iodides, e.g., absence of taste and irritation of the stomach. Although all symptoms of iodism are not avoided by its use, they are much less marked and cause less inconvenience than with the iodides. On the other hand, Sussmann[2] finds that a few patients stand sajodin less readily than alkaline iodides.

Gussmann[3] finds that this drug is a satisfactory substitute for iodides in patients who present the iodide idiosyncrasy. He administered it to a series of fifteen patients who had previously shown an intolerance to iodides. The amount of sajodin given daily averaged 2 to 3 grams, in doses of ½ to 1 gram. In none were the side-effects sufficiently marked to necessitate the drug being stopped. Two patients suffered from running at the nose. In another series of fourteen patients he found that the therapeutic effect in late syphilitic manifestations was very marked. In neither series was there any evidence of gastric disturbance.

References.—[1]*Würzburger Dissertation*, 1907, in *Münch. med. Woch.* July 30, 1907; [2]*Ther. d. Gegenw.* 1907, Bd. iii.; [3]*Heilkunde*, Dec. 1906, in *Brit. Med. Jour.* April 30, 1907.

SALICYLIC ACID.

H. C. Wood, Jr.[1] has investigated the comparative antiseptic action of salicylic acid and its salts. He finds that the neutralization of salicylic acid by sodium or strontium greatly diminishes its powerful bactericidal action. This reduction is far greater than can be explained by the mere reduction of salicyl radical in the alkaline salts. He concludes that the antiseptics of the aromatic series are more powerful in acid solution. The subsalicylate of sodium has considerable antiseptic power, as a one per cent solution is able to prevent the development of organisms.

Reference.—*Univ. Pennsyl. Med. Bull.* 1907, xix. 312, in *Amer. Jour Med. Sci.* Aug. 1907.

SALINE (Normal).

In a number of instances Rössle[1] has observed a peculiar condition of the heart which is characteristic of saline infusions, and suggests that possibly the indiscriminate use of this therapeutic measure is by no means without danger. He acknowledges the benefit of such infusions in cases where the heart is being supplied with insufficient fluid as the result of severe hæmorrhage, and also as a means of diluting poisonous material in cases of poisoning or toxæmia, but he questions whether the use of infusions is justified as a remedy for primary heart-weakness. In such cases he finds that the heart, post mortem, has a peculiar cloudy appearance; it is not firmly contracted; the muscle may be soft and friable; and other organs, such as the kidneys and intestinal wall, may be quite sodden from infiltration of fluid. Further, the blood does not clot firmly, and the red corpuscles often present definite alterations in shape. These changes are found in cases where saline infusions are used, e.g., in childbirth, apoplexy, shock, etc., when the heart and other organs are quite healthy. He points out that the changes noted by him in the human subject correspond closely to those obtained in animals which have been treated with excessive infusions of normal saline.

Reference.—[1]*Berl. klin. Woch.* 1907, No. 37.

SESAME OIL.

This oil was warmly recommended by Von Noorden as a food-stuff and as a remedy for habitual **Constipation.** Some unfortunate experiences of Rautenberg[1] show that the oil is not a harmless substance. In seven cases in the past two years he has noticed poisoning symptoms after the use of rectal irrigations with large quantities of the oil. The symptoms consisted in marked weakness, coldness of the extremities, and cyanosis of the face and limbs. The spectroscopic examination of the blood showed that this condition was one of methæmoglobin formation. In one very severe case of poisoning the patient almost died. He was unconscious for a long time, with œdema of the lungs, cessation of respiration, and loss of pupillary reaction. Rautenberg has not been able to discover what was the cause of the toxic symptoms. The oil in the last case was genuine sesame oil, and not a substituted product.

REFERENCE.—[1] *Berl. klin. Woch.* Oct. 22, 1906.

SILVER PREPARATIONS.

In recent years a large number of organic silver preparations have been introduced, for which it is claimed that they are improvements on silver nitrate. Considerable doubt has been thrown upon their disinfecting power. Last year Marshall carried out a series of investigations which proved very much in favour of the older drug. Recently Derby[1] has re-investigated the question and come to similar results. He finds that in the presence of albumin the newer preparations are inactive, with the exception of argyrol and collargol, though they all act as germicides when albumin is absent. He further places the organic preparations into three classes: (1) The non-irritating salts of low bactericidal power, such as argyrol and collargol; (2) The more effective but slightly irritating form, as protargol; (3) The very irritating preparations like nitrate of silver, which act in two ways—as bactericides and as cauterants; the value depending to a large extent upon the degree of reaction which they set up. Derby often uses weak argyrol solutions, as they are sterile and soothing to the inflamed eye, while efficient in removing pus; but he does not think that they have any real germicidal action. (*See also* EYE, GENERAL THERAPEUTICS OF.)

REFERENCES.—[1] *Bost. Med. and Surg. Jour.* Sept. 27, 1906.

SODIUM, NUCLEINATE OF.

Chantemesse[1] recommends the use of hypodermic injections of nucleinate of sodium in the prophylaxis and treatment of **Peritoneal Infection.** He narrates two cases of intestinal perforation in typhoid fever in which two or three injections of nucleinate of sodium produced marked improvement in the symptoms, and the patients lived for twelve days after the perforation without any operation. The post-mortem examination showed that the actual perforations were quite obliterated by epiploon and organized connective tissue. The effect of the injection is to produce a marked leucocytosis, chiefly of the mononuclear cells, which increases for forty-eight hours and lasts for four to five days. In one of his patients suffering from perforations an increase in the opsonic index was noted twenty-four hours after the injection. The usual dose given is 40 cgrams as a 1 per cent solution in physiological saline solution. This causes some local pain and a rise of temperature. In some cases there may be fever and distinct malaise, which is not well borne by the patient if he is advanced in years. In a strong patient, however, who is going to be operated on, the administration the day before the laparotomy of a subcutaneous injection of 40 cgrams of nucleinate of sodium is a wise prophylactic measure; but it would not be advisable to inject the drug simultaneously with the operation in the case of a feeble patient, on account of the double shock.

REFERENCE.—[1]*Brit. Med. Jour.* June 22, 1907.

SODIUM SILICATE.

Pascault[1] administers the silicate of sodium as a gastric sedative and antifermentative in cases of **Gastric Flatulence** and **Pain.** He finds it very useful in the digestive disturbance of infants, and in adults where the symptoms pointed to intestinal auto-intoxication. The formula he employs is 172 grams of sodium silicate dissolved in 1 litre of water, to which is added a trace of fluosilicate of magnesia and carbonate of lithium. The dose is one to two teaspoonfuls thrice daily before food.

REFERENCE.—[1]*Bull. Gén. de Thér.* July 30, 1907.

SODIUM SULPHATE.

Solmann and Brown[1] have investigated the antagonistic effect of injections of sodium sulphate in carbolic acid poisoning. From time to time favourable clinical reports are published about this method, but the experimental findings of Solmann and Brown are very unfavourable. However administered, they find that sodium sulphate has no effect as a chemical antidote to phenol. They show that chemical union does not take place outside the body between phenol and sulphate either in weakly acid or weakly alkaline or neutral solutions. The convulsive and blood-pressure effect produced by phenol is not modified in the slightest degree by intravenous injections of sodium sulphate in liberal quantities. It is immaterial whether the phenol be given before or after the sulphate. Any temporary stimulant action of a sulphate injection is due simply to the introduction of fluid, as it is equally well obtained with injection of normal saline solution.

Maberly[2] holds that this drug is a true **Intestinal Antiseptic.** This effect is independent of any aperient action. Indeed, to obtain the antiseptic action it is necessary to use doses which do not produce any purgation. The doses he uses are about 6 gr. for a baby under six months of age, increasing to 1 dr. for adults. The salt is given every six hours in an aromatic water. Children over six months of age are

PLATE I.

PHOTOMICROGRAPHY IN THE EXAMINATION OF FÆCES.

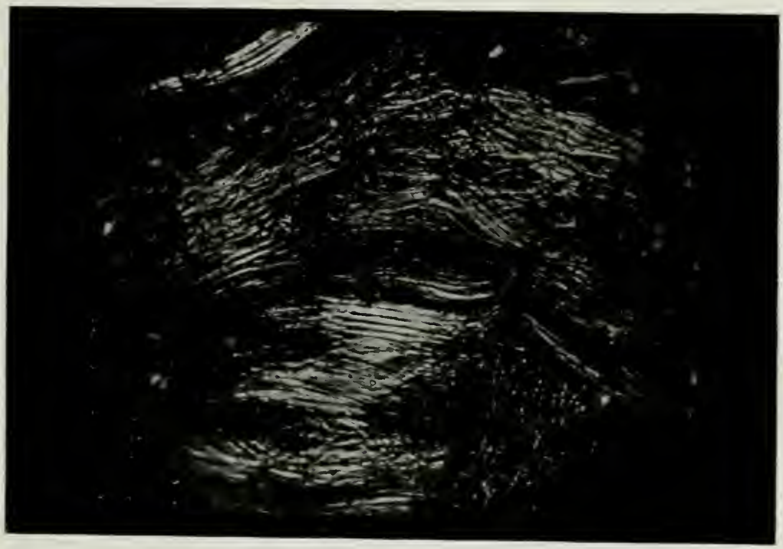


Fig. A.—From a case of Gastric Atony, showing muscle fibres of beef from a large, hard, and quite undigested mass. *Obj.* 2″.

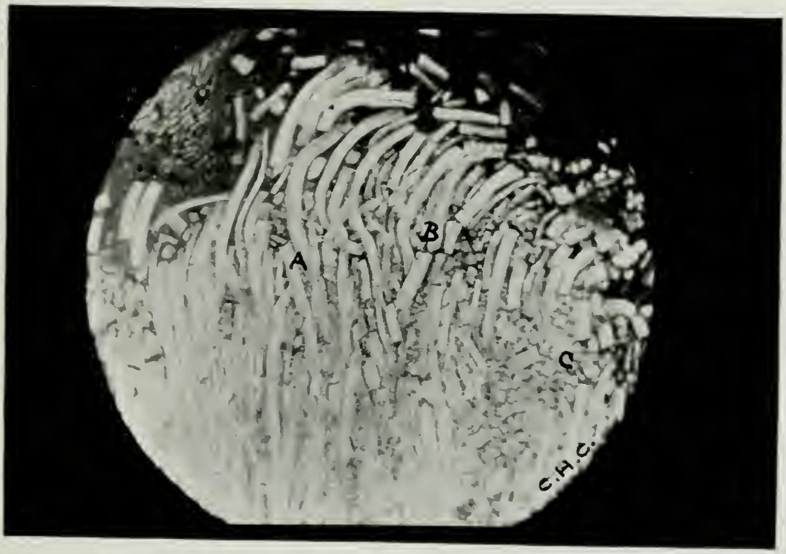


Fig. B.—Muscle fibres of mutton showing various stages of digestion. (A) Lateral separation of fibres. (B) Transverse breaking up into relatively long lengths. (C) Further breaking up into short pieces. Beyond this stage the short pieces lose their angles, become rounded, and ultimately merge into the ground substance until indistinguishable. *Obj.* 1½″.

PLATE II.

PHOTOMICROGRAPHY IN THE EXAMINATION OF FÆCES.

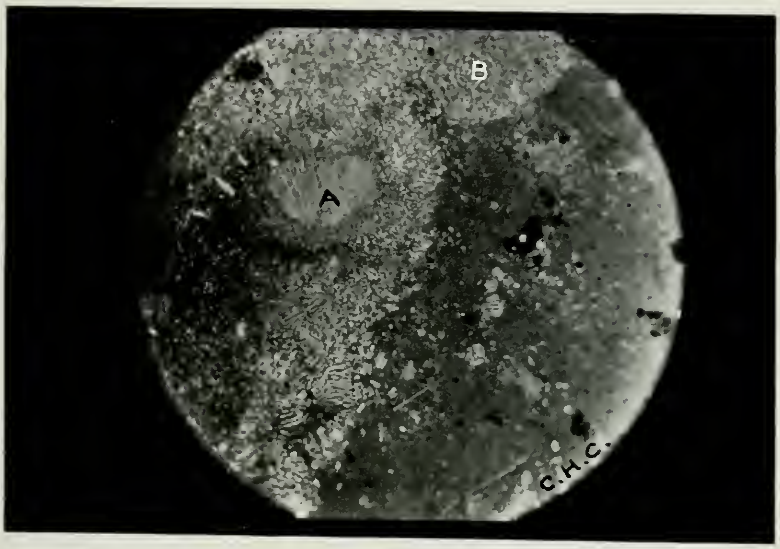


Fig. C.—From a healthy person. (A) Outer epidermis of pericarp of wheat with hairs in situ embedded in the muscle fibres. (B) Excellent digestion of meat. Muscle fibres well broken up and soft. *Obj.* 2″.

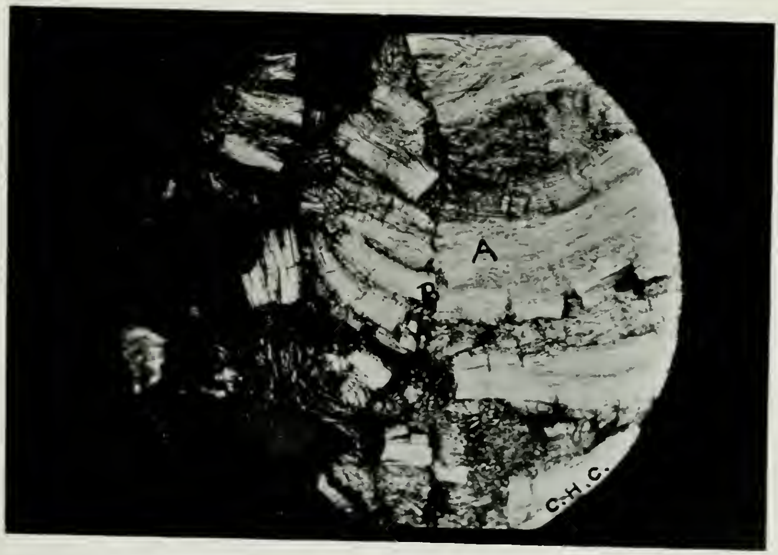


Fig. D.—From a case of Gastritis. Specimen of bacon imperfectly digested. Note (A) The dense unseparated masses of muscle fibres. (B) The transverse fracture of the latter, due to their brittleness more than to the action of the digestive juices. *Obj.* 2″.

PLATE III.

PHOTOMICROGRAPHY IN THE EXAMINATION OF FÆCES.

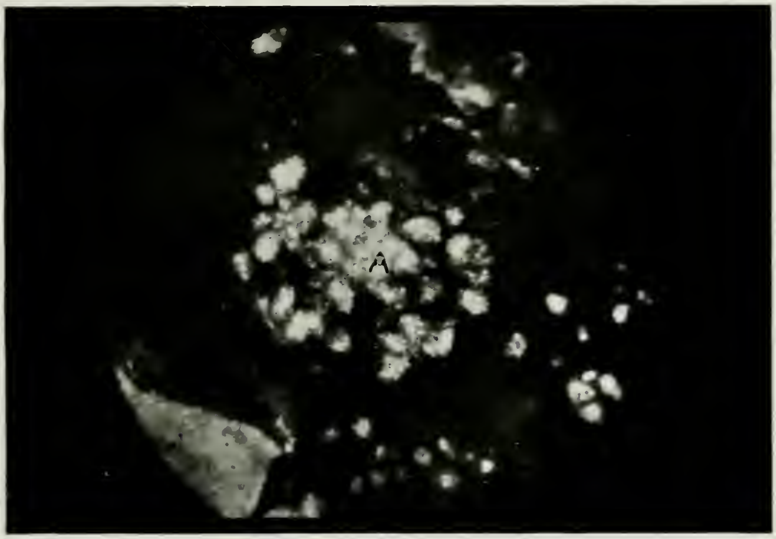


Fig. E.—From a case of Amylaceous Dyspepsia. Note (A) A group of hard nodules of undigested rice. *Obj.* 2″.

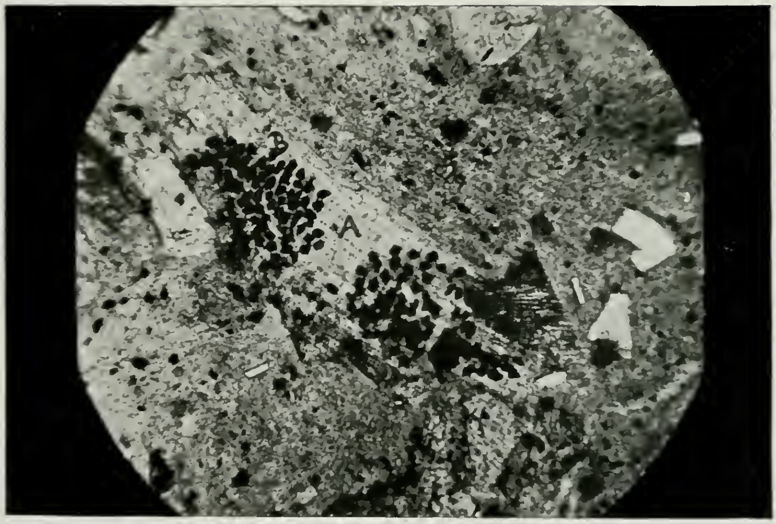


Fig. F.—From a case of Constipation. (A) A patch of the gluten layer of wheat. Note its large size, indicating imperfect peristalsis. (B) Several gluten granules still in situ. Reaction acid. *Obj.* 1½″.

PLATE IV.

PHOTOMICROGRAPHY IN THE EXAMINATION OF FÆCES.

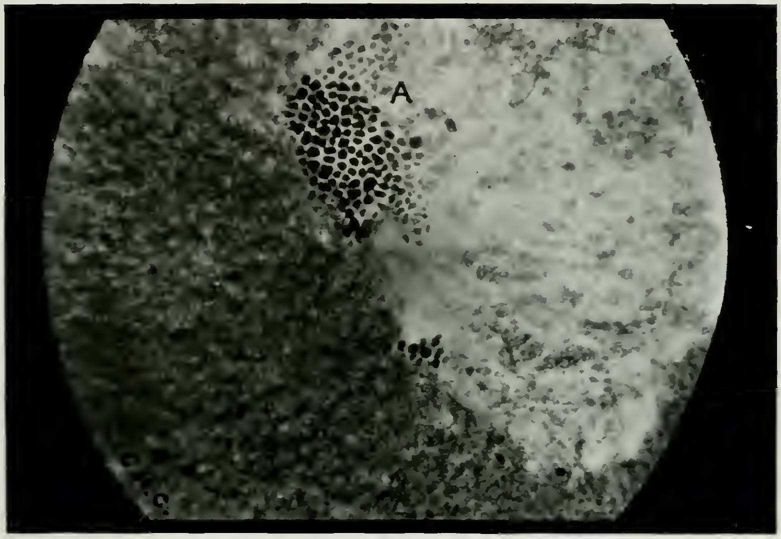


Fig. G.—(A) A group of detached gluten granules.

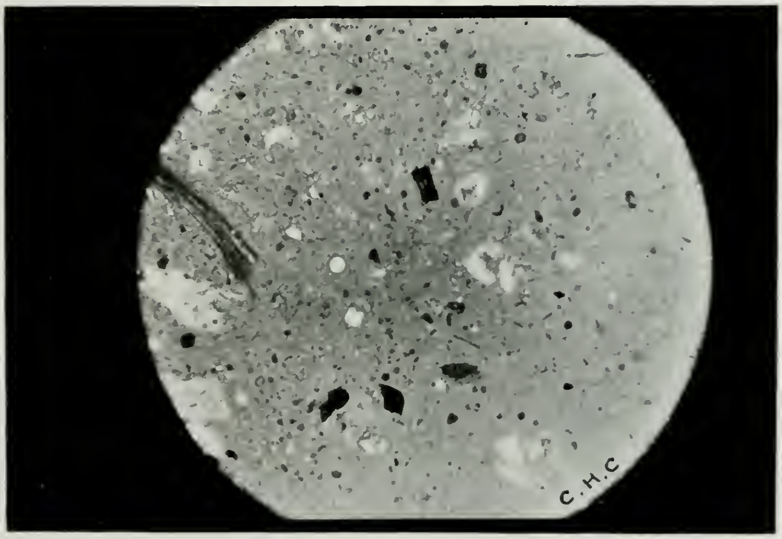


Fig. H.—From a case of Rheumatoid Arthritis. A mucoid specimen, showing granular detritus, and a large number of small typical gas bubbles indicating thorough and pervading fermentation. Acid reaction. *Obj. 2″.*

PLATE V.

PHOTOMICROGRAPHY IN THE EXAMINATION OF FÆCES.

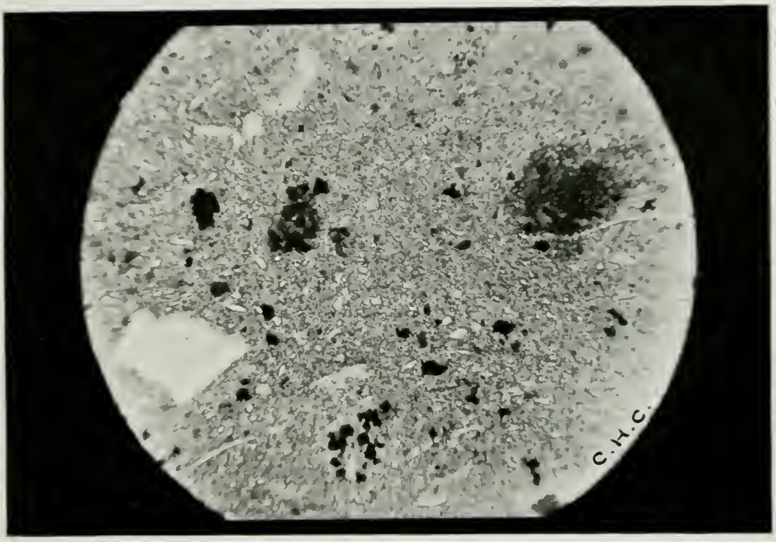


Fig. I.—From a patient taking Petroleum Emulsion. Irregularly shaped oil globules evenly distributed throughout the field and presenting a typical glistening appearance. *Obj.* 1½″.

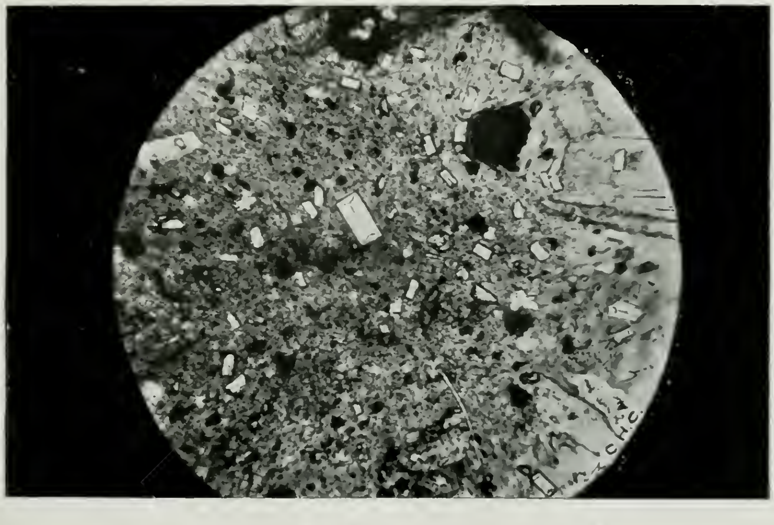


Fig. K.—From a healthy person, showing triple phosphate crystals. *Obj.* 1½″.

PLATE VI.

PHOTOMICROGRAPHY IN THE EXAMINATION OF FÆCES.

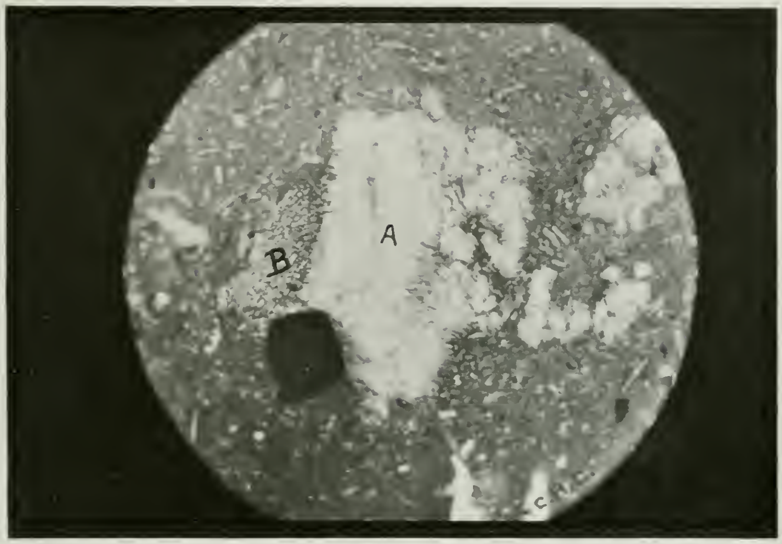


Fig. L.—Specimen showing (A) Green-pea tissue, (B) A small patch of broken-up and partly digested muscle fibre of beef. *Obj. 2".*

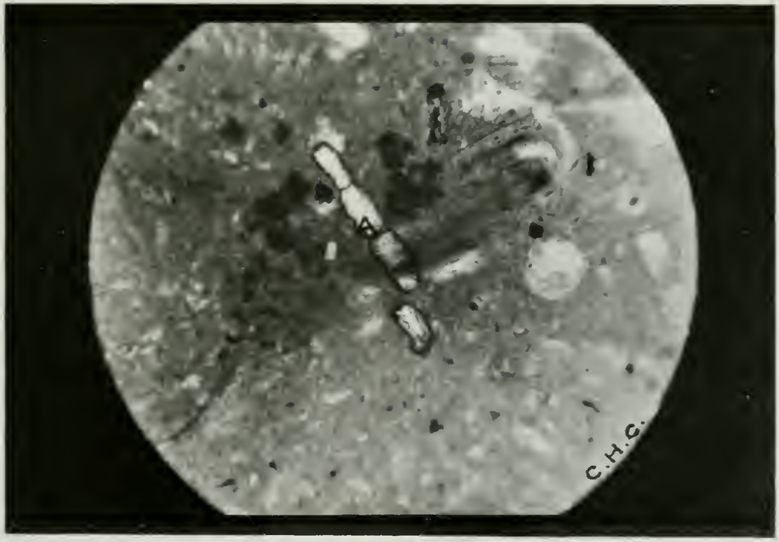


Fig. M.—Specimen showing (A) An isolated muscle fibre of pork. Note the constrictions, these being present in many such fibres in a typical specimen. *Obj. 1½".*

very tolerant of the drug, and seldom exhibit any aperient effects with doses of from 10 to 20 gr. He uses the drug in all septic bowel complaints, such as **Dysentery, Infantile Diarrhœa, Typhoid Fever,** etc.

REFERENCES.—[1]*Amer. Med. Jour.* Mar. 23, 1907; [2]*Lancet*, Nov. 10, 1906.

SPARTEINE, SULPHATE OF.

McGuire[1] recommends this drug in **Post-operative Suppression of Urine.** He finds it a powerful diuretic, which action is manifested within thirty minutes of injection, and lasts for four to six hours. He advocates large doses of 1 to 2 gr. given as a hypodermic injection and repeated every three to six hours.

REFERENCE.—[1]*Amer. Jour. Surg.* Feb. 1907, in *Ther. Gaz.* June, 1907.

STROPHANTHUS.

To determine whether preparations of strophanthus affect the nervous apparatus of the heart, Liagre[1] has performed a number of experiments which show that the preliminary slowing of the heart is due to a vagus stimulation, since section of the vagus causes the slowing to cease. During this period of slow beat, which comes on almost immediately after an intravenous injection, the blood-pressure is not raised. The rise takes place later, when the brachycardia gives place to tachycardia, with some arrhythmia. In dogs with the vagi severed, the injection of strophanthus produces, except in enormous doses, no slowing of the heart, but only an increased rate and rise of pressure.

The *intravenous administration* of strophanthin is advocated by several writers in cases of severe **Heart Failure.** It is claimed that this method gives almost immediate results, which last for a considerable time. It has been warmly advocated by Fränkel and Schwartz[2] in cases of sudden heart weakness depending upon some cause in the heart itself. From ¼ to 1 mgram of strophanthin is injected into a vein at the bend of the elbow, and relief is gained in most cases within a few minutes. Should the patient not react, the injection cannot be repeated till after the lapse of forty-eight hours. Von den Velden[3] has used intravenous injections of strophanthin in thirty instances, and is much impressed with the promptness of the action. In cases where for any cause it is impossible to give an intravenous injection, he injects the drug deep into the gluteal muscles. It is too irritating to use as a subcutaneous injection. His ordinary dose is 1 mgram in watery solution. This is injected within the space of one minute. In some cases it is better to give this dose in divided quantities of ¼ mgram at intervals of twenty minutes to control the effect of the previous dose. He used the drug in cases of **Myocarditis,** heart-failure in **Pneumonia,** and after prolonged narcosis in **Chronic Nephritis** and in **Uræmia** with manifestations of cardiac embarrassment. Provided the heart-muscle is not too much damaged, an immediate response is obtained, and the whole clinical picture may change for the better in a few minutes. In cases where the relief was not complete, or where it did not last, a second injection can be given at the end of forty-eight hours.

The use of such a powerful cardiac poison is not without danger. Von den Velden experienced this in a case where the injection of $\frac{1}{3}$ mgram was followed by sudden death. Whether this was due to sudden heart paralysis or to an embolism could not be determined, as a post-mortem examination was not obtained. Starck[4] used even larger doses than Von den Velden, as he has given as much as 2 mgrams without experiencing any unpleasant result. In all cases it is probably of great importance to inject the drug very slowly. Kotmann[5] observed a case in which the injection intravenously of $\frac{3}{5}$ mgram of strophanthin was followed by sudden paralysis of the heart. Post mortem the left ventricle was found in extreme systole.

REFERENCES.—[1]*Jour. de Phys. et de Path. Gén.* Nov. 1906; [2]*Arch. f. Exper. Path. u. Pharm.* 1907, H. 2; [3]*Münch. med. Woch.* 1906, No. 44; [4]*Deut. med. Woch.* 1907, No. 12; [5]*Cor.-blatt. f. Schweiz. Aerzte,* May 15, 1907.

STYPTOL.

Lockyer[1] finds this drug useful for relieving pain of **Dysmenorrhœa** and for checking **Hæmorrhage from Fibroids.** In the earlier and milder form of **Tubal** and **Ovarian Inflammation** styptol has a beneficial effect in checking the secondary menorrhagia, as it acts upon the pre-existing endometritis. Its chief value is in inflammatory and congestive states of the uterus. Lockyer is not sure that there is not a risk of styptol habit being set up, but moderate doses can be taken for long periods without any harm.

REFERENCE.—[1]*Folia Therapeutica,* July, 1907.

TANNOTHYMOL.

This is a product obtained by acting upon a mixture of an alcoholic solution of thymol and a watery solution of tannin with commercial formalin. In this way a tanninthymolmethane is obtained in the form of a white powder soluble in alcohol and alkaline solutions. Baumgarten finds that it gives good results in **Diarrhœa** in doses of 7 to 30 gr. several times a day.

REFERENCE.—[1]*Münch. med. Woch.* 1907, No. 25.

THIOSINAMINE.

The reports about this substance still continue to be somewhat discordant. Wolf[1] treated a case of non-malignant stenosis of the pylorus without any benefit, and eventually had to have recourse to an operation. He considers that thiosinamine is an energetic lymphagogue which attracts leucocytes and produces local hyperæmia. These effects explain how the local use can soften fibrous tissue so that it can be stretched by massage and similar treatment. He is very sceptical whether it can have any possible remote action upon fibrous tissue, and he restricts its use to cases of **Keloid, Dupuytren's Contracture, Scleroderma,** and disfiguring **Skin Cicatrices.**

On the other hand, Michaelis[2] found that it softened a cicatricial **Stricture of the Œsophagus,** and enabled him to dilate the stricture with bougies. Sachs[3] treated two cases of deficient gastric motility depending upon **Pyloric Stricture,** with injections of thiosinamine and gastric lavage. In both he obtained successful results. Emmerich[4] states that in a case of abdominal pain and obstinate constipation depending on **Cicatricial Bands** after laparotomy, complete relief was afforded by thiosinamine injections.

Grunert[5] recommends injections of the following prescription in cases of **Atrophy of the Optic Nerve:**—

℞	Thiosinam.	4 grams	Strychnin. Nitrat.	0·2 gram
	Glycerin.	8 grams	Aq. dest.	50 grams

He hopes by this treatment to soften the connective tissue in the nerve trunks. Injections of 15 mgrams are given daily into the forearm as long as improvement results, and afterwards at longer intervals. If the case becomes stationary, the thiosinamine is given alone. As it has a congestive action it cannot be used in the presence of complications such as detached retina, diseases of the vitreous, etc.

Michel finds that the best solvent for thiosinamine is a watery solution of antipyrin. A non-irritating painless solution is made by dissolving 15 parts of thiosinamine and 7½ parts antipyrin in 100 parts water.

Schourp[6] finds fibrolysin of use in softening **Urethral Strictures.** The injections were made into the upper portion of the thighs. Under this treatment the strictures became more amenable to treatment with bougies.

Salfeld[7] recommends injections of fibrolysin into the gluteal muscles in cases of **Chronic Arthritis.** This treatment was associated with massage, gymnastic movements, and ordinary spa treatment. He has treated a large number of cases on this plan, and claims that it causes absorption of exudations and swellings to be more rapid, while crepitation becomes less marked, pain ceases, and, above all, the movements of the joints become freer.

Boseck[8] reports an interesting observation in which a progressive **Myositis Ossificans** in the arms which had proved refractory to other forms of local treatment, such as massage and baths, cleared up in a very satisfactory way under thiosinamine injections, so that the hard infiltrations disappeared and the patient regained the use of her arms.

Lermoyez and Mahu[9] use local instillations of thiosinamine into the external ear, combined with pneumatic massage, in cases of **Deafness** following otitis media. In refractory cases the drug may be applied by the Eustachian tube, but as a rule this is not required if the membrane is perforated.

Rénon[10] has used thiosinamine in cases of organic heart disease. In mitral disease it has no action, but in **Disease of the Aortic Valve** the use of thiosinamine has been followed by reduction in blood-pressure and distinct improvement to the breathing and lessening of dyspnœa. It has, however, never produced any distinct alteration in the actual condition of the valve so far as auscultatory examination goes. The improvement persists for a period of two to eight weeks after cessation of treatment. In five cases of arteriosclerosis without cardiac lesion the effect of the drug was very doubtful.

Grosjean[11] has examined the physical properties of thiosinamine, and comes to the conclusion that it is a polymorphic substance capable of existing in several forms possessing different physical properties. It may occur in different varieties of crystals, and as regards solubility there are notable differences among samples obtained from different sources. Pure French thiosinamine is soluble to the extent of 5 to 6 per cent in cold water, and such solutions can be given hypodermically without producing any irritation or pain.

REFERENCES.—[1]*V. Langenb. Archiv.* Bd. lxxxii. H. 1; [2]*Med. Klin.* 1907, No. 10; [3]*Ther. d. Gegenw.* 1907, No. 1; [4]*Allgem. Med. Centr. Ztg.* 1907, No. 6; [5]*Jour. de Méd.* Oct. 28, 1906, in *N.Y. Med. Jour.* Dec. 15, 1906; [6]*Ther. Monats.* Dec. 1906; [7]*Ibid.*; [8]*Münch. med. Woch.* 1906, No. 27; [9]*Presse Méd.* June 22, 1907; [10]*Bull. Gén. de Thér.* Aug. 8, 1907; [11]*Ibid.* Aug. 8, 1907.

THYMUS GLAND.

Gwyer[1] reports briefly several cases of **Cancer** which have been treated with thymus gland. He notes as a result: (1) Diminution in pain; (2) Reduction in size of growth and in the affected glands; and (3) Improved digestion, with improvement in the general health, greater energy, and a sense of well-being. He uses the dried thymus gland of the calf, and a watery extract containing nucleoproteids and an amylolytic enzyme.

The fresh glands, after the fat was removed, were cut up, and dried at a low temperature by a forced draft of air, and then ground and sifted to a uniform powder. This was administered in water about an hour before meals.

The watery extract may be prepared from the dried gland as follows: To eight ounces of a solution of sodium chloride (4 gr. to the ounce) add a drachm of the dried powder, and a little thymol. Agitate frequently for one hour. Strain and filter as rapidly as possible. After filtering twice, acetic acid solution is added, with stirring, until a point of acidity is reached which gives good flocculi on standing a minute or two. The precipitate is separated by filtration and redissolved in a solution of sodium carbonate ($\frac{3}{4}$ gr. to the ounce of water), using about one and a half ounces of the solution. This solution is filtered twice, and to it is added acetic acid to acidity and good precipitation. The precipitate is again separated by filtration and redissolved in a solution of sodium carbonate (1 gr. to the ounce of water), using 2 dr. of the solutions and adding thymol. This final solution is filtered three times or more, and with a crystal of thymol will keep good in a refrigerator for an unknown time. Each drachm of the solution represents the products from half a drachm of the dried gland. The process for the production of an ounce of the extract takes about six hours. Distilled water should be used, and the solutions kept cool during manipulation. This solution is given by mouth and by hypodermic doses up to one drachm. Hypodermically it shows no tendency to cause local irritation.

REFERENCE.—[1]*Ann. Surg.* July, 1907.

THYROID GLAND.

Heymann[1] has noted enlargement of the thyroid gland in a very large percentage of patients suffering from **Hay Fever.** He was thus led to administer thyroidin (1 to 3 tablets daily), and found that in a number of instances the attacks did not develop at all, or came on in a much milder form.

REFERENCE.—[1] *Arch. Internat. d. Laryngol.* 1907, No. 3.

TRINITRIN.

Rémond and Voivenel[1] point out that in certain cases of **Mental Disease** the symptoms depend on cerebral anæmia from vasoconstriction. In such cases trinitrin should be tried. They report two cases in which this course was followed by rapid cure.

REFERENCE.—[1] *Progrès Méd.* June 1, 1907.

TRYPSIN.

Morton[1] has thoroughly tested Beard's plan of treatment on a series of thirty cases. His results are by no means discouraging, and he recommends that the treatment should have a further trial. He has in three cases obtained an apparent cure by the trypsin. In one case of **Breast Cancer** which was examined microscopically after it was almost cured, he found a remarkable process of retrogression had taken place, consisting of degeneration of cancer cells and great increase in the fibrous tissue. In many cases the injection of trypsin was followed by a marked reaction in the diseased tissue, which swelled up, became hot and painful, and the discharge increased. In addition to this local effect there may be a constitutional reaction, shown by rigors, fever, pain in the back, drowsiness, etc. These results are not unfavourable, as they indicate that the trypsin is attacking the cancer cells. The constitutional symptoms are probably due to the toxic action of absorbed and destroyed cancer products. The use of trypsin reduces pain and hæmorrhage, and the cachexia is relieved, with improvement of the general health. He is inclined to think that a large measure of the success is due to the proper use of the pure diastase (injectio amylopsini), which is used in the later stages of the treatment. Morton thinks that large doses of trypsin should be used. He recommends feeling one's way with from 20 to 30 min. doses of injectio trypsini daily from four to six weeks, and then resorting to amylopsin. The trypsin should not be injected directly into the tumour.

How great caution is required in accepting statements of enthusiastic supporters of new drugs is shown by the fact that the same tumour which was described by Morton as cured was submitted by Bambridge[2] to several other pathologists, who found no evidence of cure either in the tumour itself or in the metastatic growth.

Rice[3] reports a case of supposed cancerous growth in the larynx, which was cured by subcutaneous injections of trypsin, combined with oral administration of holadin, a diastatic extract of the pancreas. The trypsin was injected into the abdomen, and the tumour became red, congested, and softer after the injections; and eventually the greater portion sloughed away. This finding does not agree with the conclusion of Graves[4], that the trypsin does not affect the cells except by direct contact. To influence a node he found it necessary to bring it into immediate contact with the injected trypsin. Thus by systematic injection an isolated node may be made to shrink, though other neighbouring nodes not in direct contact with the injection may grow and enlarge.

Abrahams[5] found trypsin useless in a case of inoperable cancer; but successful results from this form of treatment are recorded by Shaw-Mackenzie[6] and Carter[7] in apparently hopeless cases. Doran[8] reports a case in which the treatment was successful in a fibrosarcoma which recurred after operation. An unfavourable report was made by Ball and Thomas,[9] who observed eleven cases which were treated in the Middlesex Hospital. They conclude that the treatment had no effect upon the course of the disease, while the hypodermic injections often caused considerable discomfort to the patients.

Cleaves has had considerable experience with the enzyme treatment of tumours, and comes to the conclusion that it is justified by: (1) The relief from pain; (2) The absence of odour and necrotic discharge; (3) The improvement in metabolism, even in cases which ultimately succumb, and by the increased mental vigour and hope which the treatment inspires in the patients. Further, the pathological findings are in favour of the view that the treatment is curative. She disputes Graves' statement that it is necessary to inject the enzyme directly into the tumour mass. She describes a tryptoglycogenic reaction, consisting in a moderate leucocytosis with a very distinct and characteristic increase in the eosinophilic cells. This she ascribes to an alteration in the metabolism of certain proteid molecules in the cancerous tissue which are attacked by trypsin. As the result a simpler form of molecule is obtained than in the ordinary course of metabolism, with a consequent faulty metabolic functioning of the cell and, perhaps, its death. The development of eosinophilia would point to an excessive production of glycogen, which may be one of the results of this alteration in the proteid synthesis.

References.—[1]*Med. Rec.* Dec. 8, 1906; [2]*N.Y. Med. Jour.* Mar. 2, 1907; [3]*Med. Rec.* Nov. 24, 1906; [4]*Bost. Med. and Surg. Jour.* Jan. 31, 1907; [5]*Lancet*, Feb. 6, 1907; [6]*Med. Press*, May 15, 1907; [7]*Ibid.* Mar. 18, 1907; [8]*Med. Rec.* July 6, 1907; [9]*Arch. Middlesex Hosp.* vol. ix. in *Pract.* Aug. 1907.

VANADIC ACID.

Le Blond and David[1] find that this drug possesses the property of oxidizing organic matter owing to the fact that it can take up and give off oxygen. The salts of vanadic acid possess this property only in so far as they contain vanadic acid. Internally the authors have used the acid in **Chlorosis** and **Anæmia,** giving 2 dr. of a solution of 15 mgrams in 1 litre of water. Local applications of a solution of 5 cgrams to the litre of water, or, better, this diluted with 3 to 10 parts of glycerin, may be applied as swabs to mucous membranes or as compresses.

Under such applications raw surfaces heal rapidly. They have used the undiluted solution in **Lupus,** simple **Wounds, Condylomata, Tuberculous Lesions, Chancres. Gummata,** etc., and healing has taken place rapidly. Local applications have been very successful in **Urethritis** and **Endometritis.** In **Vaginitis** the parts were thoroughly cleaned out, washed with the solution, and tampons soaked with it left in for twenty-four hours. In endometritis the solution may be applied to the diseased surface on a flexible metal bougie, at first in full strength, and then gradually reduced to one-tenth its original strength, i.e., from 5 cgrams to 5 mgrams of the acid to the litre.

REFERENCE.—[1]*Progrès Méd.* July 14, 1906, in *Brit. Med. Jour.* Jan. 26, 1907.

VERONAL.

Pokotilo[1] recommends the use of veronal in combination with chloroform. From one and a half to two hours before the operation 1 gram of veronal is administered. The result is that by the time the patient comes to the operating-table he is in a state in which he feels no anxiety about the operation. Consequently he requires less chloroform to produce anæsthesia, and the preliminary stage of excitement is shortened. Vomiting after coming out of the anæsthetic is very uncommon.

REFERENCE.—[1]*Centr. f. Chir.* 1907, No. 18.

VIOFORM.

This is a quinoleine derivative. It is a greyish-yellow powder, without taste or smell, and of a neutral reaction. Piquand[1] has used it extensively as a substitute for iodoform, and has found it a very satisfactory **Antiseptic.** It possesses greater deodorizing power than iodoform, while its bactericidal action is as great. It is much less toxic, and does not produce eczema. It can be sterilized by heat without undergoing decomposition or losing any of its therapeutic properties. He used it in the form of a powder or gauze impregnated with vioform dissolved in glycerin and water. As a pomade (1–40) it is very serviceable as a dressing for wounds. The pomade is applied every second day, the surface of the ulcer being cleaned at each dressing by applying compresses of warm water. When the ulcer is clean, vioform powder may be dusted on every four or five days. Under this treatment the discharge rapidly ceases and all odour is removed.

REFERENCE.—[1]*Arch. Gén. de Méd.* Oct. 30, 1906, in *Brit. Med. Jour.* July 22, 1907.

WHISKY.

Charteris and Cathcart[1] have tested the physiological action of pot-still and patent-still whisky, contrasting them with similar amounts of absolute alcohol. They come to the conclusion that there is no essential difference between the action of these three types upon the heart and circulation of healthy individuals and patients suffering from acute infectious disease. In other words, the action depends chiefly upon the alcoholic content, and only to a secondary degree upon the nature of the secondary products produced by the distilling process. Their investigations further show that the stimulating action upon the circulation is very transient, passing off completely within an hour.

REFERENCE.—[1]*Brit. Med. Jour.* May 18, 1907.

SERUM-THERAPEUTICS.

Antiyeast Serum.—Deutschmann[1] describes a new serum prepared by treating animals with increasing doses of yeast. The blood of such animals becomes more resistant to infection, and the injection of the serum confers considerable protection against pneumococcic, streptococcic, and staphylococcic infection. In patients suffering from such infections the serum improves the general condition and favourably affects the temperature, while the course of the disease is shortened. In fever due to an infective agent the temperature may be affected in one of two ways. It may either fall from the time of infection, or there may be a preliminary rise lasting for a couple of hours, followed by a fall lasting from three to six hours. It is fairly characteristic of acute infections that an injection is followed on the next day by a rise of temperature, which, without further administration of serum, gives place to a definite permanent fall. He has used it with benefit in cases of pneumonia, and specially recommends the serum in eye cases when there is any tendency to suppuration.

Autoserum.—Under this title Gilbert described a method of treating pleurisy which is, he claims, of striking benefit. A needle is introduced into the pleural cavity, and 1 cc. of the effusion is withdrawn. Without taking the needle out again, this serum is then injected subcutaneously. Jona[2] has tested the procedure in fifteen cases, and found that it was beneficial. The effusion is absorbed and diuresis is stimulated. This diuretic action was quite distinct in thirteen out of the fifteen cases. The procedure is applicable alike to tuberculous and non-tuberculous cases.

Cerebrospinal Fever.—Radmann[3] suggests injecting into the subcutaneous tissue the fluid obtained by tapping the spinal canal of a patient suffering from cerebrospinal fever. It is not possible to induce cerebrospinal fever by subcutaneous injection of the specific germ, but the germs are destroyed by the fluids of the body. He thinks that advantage may be taken of this fact to produce immunizing bodies which may act favourably upon the local disease in the meninges.

Wassermann[4] has used a meningococcic serum, obtained by treating a horse with the specific organism. The results were encouraging, more especially if the serum is used at the commencement of the disease. Thus, of fourteen children who received treatment on the first day, only three died.—(See CEREBROSPINAL MENINGITIS, EPIDEMIC.)

Dysentery.—Sksehivan and Stepansky[5] have treated a number of cases of dysentery with an antitoxic serum obtained by prolonged treatment of a horse with filtered cultures of Shiga's bacillus. Fifteen cases were treated in all; in ten the bacillus of Shiga was obtained in the discharge of the bowel. The serum had a marked action, which became evident after two or three days' treatment. The general improvement is shown by diminution in the number of evacuations, and by the temperature falling rapidly. None of the acute cases passed into the chronic form. The serum was given subcutaneously in large doses, from 40 to 100 cc. being used as a dose.

According to Vaillard and Dopter,[6] the antidysenteric serum of the Pasteur Institute has reduced the mortality of dysentery due to the *Bacillus dysentericus* from 10 to 15 per cent to 1·6 per cent. Its results are infinitely superior to those obtained with drug treatment. It causes almost immediate relief. In a few hours the pain ceases, the tenesmus becomes less marked, and, except in severe cases, disappears within the first twenty-four hours. Simultaneously the function of the bowel improves. The stools become less numerous and turn fæculent within two days after serum treatment is instituted. Thus the whole course of the disease is reduced. Slight cases may be cut short in twenty-four hours; cases of moderate severity require thirty-six to forty-eight hours, and severe cases take five to six days. The serum is injected in the following doses:—For moderately severe cases, with from fifteen to thirty evacuations in the day, 20 cc. is given. and, if there is no improvement, this dose is repeated on the day after next. In dangerous cases (sixty to a hundred evacuations) from 40 to 60 cc. should be given, which may be repeated next day, and afterwards in diminishing doses, till the stools become normal. In very dangerous cases, with upwards of a hundred evacuations in the day, even larger quantities of serum are required. The larger doses may cause the ordinary symptoms of serum intoxication, but these are not dangerous. As a prophylactic measure to obtain temporary immunity for ten to twelve days, a single injection of 10 cc. is sufficient.

A new polyvalent serum has been introduced by Coyne.[7] He points out that all cases of dysentery do not depend upon the same bacterial cause. Thus dysentery may arise either from an amœboid infection, or from a bacterial infection. Even in the latter case different organisms have been isolated. They may be divided into two distinct classes. Into the one class are put the bacilli described by Shiga, Kruse, and Flexner, while the other is represented by the bacillus described by Flexner (in Manila), Hiss, Strong, etc. These two classes of bacteria present certain common properties, but differ in some respects in regard to their toxin production and culture reactions.

It is therefore quite evident that a serum prepared exclusively by injection of cultures of the first class of organism may not have a curative action against a dysentery produced by a bacillus belonging to the second class. The advantages of a polyvalent serum obtained by simultaneous immunization against bacilli of Shiga and Flexner types is therefore obvious. A polyvalent antidysenteric serum of this character has given excellent results in animal experiments, both as a prophylactic and curative agent. In a small epidemic of dysentery which occurred in a hospital for children, cases were observed which represented both types of bacillary infection. The results obtained from the use of the serum were very encouraging for both types of infection. In every case the serum was given by hypodermic injection. In slight cases a single injection proved sufficient, but severe cases required one or more repetitions of the dose. The improvement followed the injections so promptly, and was so unmistakable, that there is no doubt in the mind of Coyne that the serum acts as a true specific for infantile dysentery.—(See also DYSENTERY.)

Fresh Serum.—Weil[8] states that fresh serum, either of human or animal origin, causes the hæmophilic blood to clot. In cases of severe bleeding 20 to 30 cc. may be injected, and the same dose may be used as a prophylactic measure before operative interference in those known to be hæmophilic. In cases where fresh serum cannot be obtained, diphtheritic antitoxic serum may be used instead.

Plague.—Lucas[9] reports favourably on the action of Haffkine's antiplague vaccine as a prophylactic measure. The inoculations not only reduced the mortality, but also very markedly the incidence, of the disease.—(See also PLAGUE.)

Rabies.—Babes[10] claims that the results obtained in Bucharest are superior to those obtained elsewhere in Pasteur Institutes. The Roumanian treatment differs somewhat from the regular procedure of Pasteur, as guinea-pigs are used instead of rabbits, and in severe cases an antirabic serum is used as well as the attenuated cord virus. In general terms the Roumanian treatment is more vigorous than elsewhere. Thus fresh cords are used after three or four days, and heated emulsions of infected cords are employed along with the antirabic serum in severe cases. The success of this line of treatment is shown by the fact that in the past three years 3947 cases have been treated without a single failure.

Scarlatina Vaccine.—Gabriczewsky[11] has prepared a vaccine from streptococci obtained from the heart blood of fatal cases of scarlatina. The cocci are grown on bouillon, which is evaporated to a tenth of its original consistence, and the cocci are killed by heating to 60° C. and adding 0·5 per cent carbolic acid. Each cc. of the vaccine contains about 0·02 to 0·03 cm. of bacteria. Three doses of vaccine are given. The first is 7½ min. injected into the abdomen, while the two succeeding ones are 15 and 30 min. respectively. The first dose causes a febrile reaction, and in some instances sore throat and a punctiform scarlet rash almost indistinguishable from true scarlatina, but not followed by desquamation. The other doses are given at intervals of ten days, and cause much less reaction. Gabriczewsky has records of 700 children treated in this way, and is convinced that the injection of vaccine has a great prophylactic value. Langowoi[12] used the vaccine in a surgical hospital as a prophylactic measure among children, and had only one case of scarlatina out of 120 cases treated, while in the four preceding years 3 per cent of his child patients were attacked. He confirms Gabriczewsky's observations about the rash and general symptoms following the injection of the vaccine.—(See also SCARLET FEVER.)

Tuberculosis.—

BEHRING'S TULASE.[13]—This is a tuberculin preparation which is formed by a complicated process of treating the tubercle bacilli with chloral. Behring has found that it is possible to immunize healthy individuals by administering tulase by the stomach, or intravenously, or by hypodermic injections. Healthy individuals require some four or five months, but in tuberculous subjects this result is obtained much more rapidly. This has been shown in tuberculous sheep. Meantime, however, the new preparation is chiefly being used in the form of hypodermic injections, and as such seems to exert a curative action in tuberculosis and scrophulosis of children. Tulase can only be obtained under certain conditions from Prof. Behring, of Marburg, who desires any clinicians wishing to use the new drug to send a competent assistant to his laboratory to go through a course to learn how to employ the tulase.

Collin[14] describes the preparations of tulase as follows:—Tubercle bacilli are grown on bouillon. The bacilli are separated by filtration and then rubbed up into a paste with chloral hydrate. After standing for a prolonged period, this mixture separates into two portions, one a clear fluid, and the other a waxy residue. This residue is retained. It is carefully rubbed up with water, and then forms a permanent emulsion which, from its white colour, is called tulaselactin. This tulaselactin has been found efficient in curing localized tuberculous lesions in animals, but it is of very doubtful benefit in general progressive lung lesions. In the animal experiments it was found that in all cases where local tuberculous lesions disappeared under tulaselactin injections, antibodies appeared in the blood. These are of two kinds. The one kind is capable of neutralizing the toxins stored up in the bodies of the bacilli, while the other antibody seems to act upon the bacilli, extracting the fatty substances out of them, and so preparing for the digestion and destruction of the tuberculous virus by the tissues of the infected animal. The first variety of antibody can be obtained in large quantity by highly immunizing a horse to tulaselactin. Under the name of antitulase it is used in therapeutics. The use of tulaselactin causes an active immunity, whereas antitulase confers a passive immunity. Collin has tested these two preparations in a series of local tuberculous infections of the eye. He is rather guarded in his verdict about the efficacy of the treatment. The tulase preparations certainly produce a specific effect upon local tuberculous eye lesions, and have no permanent deleterious effect upon the general health. The two preparations produce distinct reactions. The injection of antitulase is quite painless, but the resulting reaction is observed to centre round the tuberculous lesions, and is thus of a local character. The injection of tulaselactin frequently produces a distinct burning sensation. The resulting reaction is of a general nature, and with the initial doses may lead to rise of temperature. All the patients put on weight during the treatment.

Eber[15] discusses the value of Behring's procedure as the result of his experience with calves which have been treated with bovovaccine. He agrees that it is possible to increase the resisting power of young calves against infection from intravenous or subcutaneous injection of virulent tubercle bacilli. This can certainly be accomplished by previous treatment with tubercle preparations. But the real question is, How far does this immunity protect during subsequent periods ? To determine this point he subjected immunized and non-immunized calves to infection from diseased animals. The calves were kept under exactly the same conditions, and as the result of this experiment all the animals exposed to infection became tuberculous whether they had been previously immunized or not. The same point is brought out by following up the history of 203 calves which were immunized. At a subsequent period he was able to test with tuberculin 148 of these calves, and found that fifty-six (37·8 per cent) reacted. In eighty-one instances the test was performed at least twelve months after the immunization, and of these thirty-seven (45·7 per cent) gave a positive reaction to tuberculin. In sixty-seven calves the period since the last immunization varied from two to nine months, and of these nineteen (28·4 per cent) reacted to tuberculin. These figures correspond closely to what occurs when healthy animals not previously immunized are put into a district in which bovine tuberculosis is rife, and therefore he concludes that in this experiment the previous protective immunization conferred no protection. He sums up his observations in the following terms : "It is possibly true that the preventive immunizing treatment enables the animals to withstand infection for a period. But it is certain that this protection in the great majority of cases does not enable them to withstand prolonged exposure to infection or exposure to infection after the lapse of considerable periods of time. It is useless to depend entirely upon protective immunization to stamp out tuberculosis in a district thoroughly infected. Further investigations may determine how far such protective immunization can aid other measures in the fight against tuberculosis, such as weeding out of all manifestly tuberculous cattle, and rearing the calves on pasteurized milk or on the milk of cows known to be free from tubercle."

On the other hand, much more favourable results were obtained by Heymans,[16] who has carried out experiments on a large scale on calves. By means of a small opening under the skin he introduces a small bag containing tubercle bacilli. The wall of the bag effectually prevents the bacilli from passing out, but the toxic products slowly dialyse, and so subject the animals to a gradual process of active immunization. As the result of this absorption of toxin, the vaccinated animals acquire in the course of from fifteen to forty days the power of reaction to tuberculin, which remains for the space of two to four months. Careful observation shows that this power of reacting is due, not to any active infection, but simply to the absorption of toxic material from the bag, since no infection of the lymphatic glands is found on post-mortem examination. In time the vaccinated animal produces antitoxic bodies, which act upon the bacilli contained in the bag and lead to their death. The vaccination confers a certain degree of immunity, as has been proved by the subsequent experimental infection with virulent bacilli introduced into the subcutaneous tissues or administered with the food. After establishing these facts, the vaccination was tried on a large scale among notoriously infected byres. Upwards of 3000 animals were vaccinated, and it was found that even in tuberculous animals the vaccination produced no ill effect, while in a large proportion of cases animals which, before vaccination, reacted to tuberculin, in the course of time ceased to react after the vaccination. Thus the tuberculin test carried out six to twelve months after the vaccination showed a negative reaction with from 30 to 80 per cent of those previously reacting. Lastly, the utility of the vaccination on a large scale is shown by the fact that in those farms in which it has been used the proportion of tuberculous animals has diminished very considerably.

TUBERCULIN.—Pirquet has described a cutaneous reaction to the inoculation of old tuberculin which is, he claims, of diagnostic importance. Persons suffering from tuberculosis react in the following fashion:—The tuberculin is diluted four times and inoculated on the skin. In tuberculous subjects within twenty-four to forty-eight hours there is a positive reaction in the shape of a more or less extensive flat red papule. Engel and Bauer[17] have tested this reaction as regards its specific nature, and conclude that there is an intimate connection between the reaction and the presence of tubercle, but they are not convinced that a positive reaction invariably denotes tuberculosis. In infants Pirquet's method is unreliable. In older children it gives better results, but in any case its diagnostic value is not so great as the older method of injecting tuberculin subcutaneously.

Other observers come to a similar conclusion. Thus Adami and Burnet[18] have found it unreliable for adults, as cases of obvious tuberculosis do not invariably react. In their experience the reaction takes place as a rule within the first twenty-four hours. Similarly Bandler and Kreibich[19] obtained uncertain results. They used undiluted old tuberculin in a series of thirty-seven cases of tuberculous disease occurring in adult life. Of these only twenty-two reacted, and the degree of reaction varied very much. The most certain results were obtained in tuberculosis of the skin. Nagelschmidt[20] points out that the local application of old tuberculin to a tuberculous skin focus caused a local ulcer, whereas applied to sound tissue it only causes a papule.

BÉRANECK TUBERCULIN.—Béraneck[21] describes the action of his preparation. His tuberculin contains diffusible, soluble exotoxins elaborated by bacilli growing in culture media, and endotoxins contained in the bodies of the bacilli. They are extracted by means of a

1 per cent solution of orthophosphoric acid. The injection of this tuberculin into a horse gives rise to the production of specific antibodies, viz., an agglutinin, a precipitin, and a sensitizing substance, which exert these actions upon the tubercle bacilli. The lethal effect of Béraneck's preparation is relatively slight, but it produces a marked febrile reaction. The specific antibodies produced by the injection of this tuberculin into a healthy animal to some extent neutralize the toxic action of the bacilli; but it does not act in an equal fashion against all the toxic products. Its action is hardly manifest for the exotoxins, but is almost entirely limited to the endotoxins. The previous use of tuberculin injections has an effect in protecting animals against subsequent inoculations of tubercle. Injected directly into the diseased foci it exerts a definite curative action. Subcutaneous injections of the tuberculin provoke in healthy animals a general reaction, shown by fever. In tuberculous animals, in addition to a general reaction, there is a local one in the diseased tissues. If, however, the preparation be directly injected into the diseased tissue, the febrile reaction is much less evident, but the local reaction is more conspicuous. If the circulation of the diseased part be in any way impeded, the febrile reaction becomes still less marked, but the local reaction is distinct. Béraneck explains this as follows: His tuberculin acts upon the phagocytic cells as a vaccine. By a chemotactic action of a positive nature it attracts the leucocytes to the diseased centre where it was injected, while at the same time it exerts a certain toxic action upon the attracted cells, some of which succumb, setting free the bacteriolytic ferments which they contain. Other leucocytes less affected by the relatively feeble toxic action of the tuberculin readily become accustomed to it, and at the same time are rendered more resistant to the soluble products produced by the living tubercle germs in the diseased tissues. They are thereby enabled to cope with the tubercle bacilli, and may eventually obtain the mastery over them, resulting in a clinical cure. In all cases of surgical tuberculosis in which local injections into the diseased tissue were used, the accumulation of leucocytes into the injected part could be actually demonstrated. In cases where the tuberculin is given, not into the diseased focus, but by subcutaneous injection, the course of events is similar. Injected in increasing doses, the leucocytes circulating in the blood become more accustomed to the toxic elements, and therefore, when they enter into the diseased tissues, are more able to resist the toxic products of the germs, and thereby more readily attack them.

Coulon[22] has used this tuberculin in a series of fifty cases of tuberculosis of joints or bones, and reports 80 per cent of cures. He is very favourably impressed with the certainty with which the treatment acts. In his opinion better results are obtained with it than with any other form of conservative treatment. In treating a case he immobilizes the part with a plaster splint, in which an opening is made to permit of injections. The quantity of tuberculin injected should be such that a definite local and general reaction is obtained.

The next dose is not given till the reaction from the previous one has passed off.

Machard[23] was much less enthusiastic about the merits of tuberculin. His experience was limited to sixteen cases of tuberculosis of bone or joints. According to his report, tuberculin presented no advantages over fixation of the joints with counter-irritant treatment.

Jaquerod,[24] who has had experience with other forms of tuberculin, points out that none of them possess to the same degree the power of Béraneck's preparation of picking out the local foci by a local reaction.

Denys' preparation of tuberculin is a filtered bouillon. Kursmarcker[25] has cured a series of cases of tuberculosis in women with it. Of twelve cases reported, three involving only the bladder were cured. Two renal cases were greatly improved, while seven cases with lesions in the kidneys and bladder gave five successful results.

Koch New Tuberculin, T.R.—Darier[26] recommends the use of this preparation in cases of ocular tuberculosis. He employs very small increasing doses, commencing with $\frac{1}{500}$ mgram. These injections are made into the back or gluteal region, under careful control of the temperature. If there is no fever they may be repeated every second day. Eventually, after a long course of subcutaneous injections, the drug may be injected locally into the conjunctiva.

McIntosh[27] has healed a series of fifty children with tuberculin injections, commencing with an initial dose of $\frac{1}{1000}$ mgram of T.R., and increasing to $\frac{1}{500}$ mgram, but his results were not very striking. Even though the opsonic index was raised and kept high, only some four or five cases made a more rapid or striking recovery than was got by the usual surgical measure. The cases treated included examples of phthisis, lupus, joint disease, and spinal caries.

Roemisch[28] thinks that tuberculin treatment gives good results in a class of chronic phthisical patients, in whom the ordinary treatment with fresh air and rest at first gives marked improvement in the local and general conditions, but after a time no further improvement can be obtained. In these cases tuberculin may sometimes produce astounding improvement, which is permanent in its effect. He states that he has obtained marked benefit by changing the form of tuberculin used when no further good is obtained by the tuberculin in use. Thus it is advantageous to try in series Koch's tuberculin and Denys' and Béraneck's preparations, which change in many cases causes still further improvement.

Marmorek's Serum[29] is prepared by injecting horses for seven or eight months with filtered young cultures of tubercle bacilli grown on a fluid medium consisting of calf serum and glycerinated liver bouillon. The calf serum is rendered "leucotoxic" by previously treating the calf with injections of guinea-pig blood. The effect of this leucotoxic property is that bacilli grown in the serum set free tuberculotoxin. By injecting the filtered culture into horses it is claimed that a special antitoxin is obtained which is able to confer immunity of a passive character to animals.

Weil[30] has tested the effect of the serum in tuberculous disease of the larynx, and has noted in a number of cases a very rapid improvement in the local and general conditions. Improvement in some cases is very rapidly obtained, and Weil recommends the use of the serum in all early cases. In these serum alone is sufficient to effect a cure, but in more advanced cases local treatment is required in addition.

Hoffa[31] has used this serum in the treatment of cases of surgical tuberculosis, and finds that it is of use. His experience was gained in a series of forty cases, treated partly in the outdoor department and partly in a sanatorium for children. The serum was used at first in the form of subcutaneous injection, but latterly it was found to be more readily administered by the rectum. The latter method causes absolutely no serum reaction. Of twenty-two cases which were treated thoroughly by the serum, 18 per cent healed rapidly and definitely, while a further 18 per cent showed very marked improvement. The rectal treatment allows larger doses to be used; and of cases treated by this plan 18 per cent were cured, 27 per cent distinctly improved, while only 18 per cent did not benefit at all. He concludes that Marmorek's serum exerts a specific action, and as it is easily applied it is likely to become a valuable means of combating surgical tuberculous lesions.

Van Huellen[32] reports Sonnenburg's experiences with the serum, which are distinctly favourable. He employed it chiefly for subcutaneous injections, and notes a considerable number of reactions which may follow this course of treatment. These side effects are very unpleasant, but do not interfere with the specific healing effect, though as a rule those patients improve quickest who suffer least from the injections. His results are briefly as follows:—Sinus cases, twenty-one, completely cured seven, the rest distinctly improved; enlarged glands, four cases, with three successful results and one unsuccessful. Joint cases, eight treated, with only one success. Of two cases of tuberculous peritonitis, one improved very much, but the other did not. Two cases of cold abscess were treated, and one dried up, but the other required operation.

Ullmann[33] has treated a series of thirty cases with rectal injections of the serum. The cases represented various forms of medical and surgical tuberculous disease, and there is no doubt that the serum treatment proved of great value. It seemed specially effective in a series of twelve cases of scrofulous disease of the cornea, for in every such case in which the serum was begun at an early stage, the result was a complete and rapid cure.

A very favourable report is published by Schenker[34] regarding this form of tuberculin. He administered it to patients suffering from fairly advanced forms of pulmonary tuberculosis, and obtained a large proportion of cures. Out of thirty-nine cases treated by rectal injections, eight were definitely cured, while eleven were enabled to undertake light work. Given by the rectum the injections caused no unpleasant effects. At first the quantity of the sputum increases, and with this there is an increase in the intrapulmonary physical signs. In the course of time the sputum diminishes, the bacilli become fewer or disappear altogether, while the intrapulmonary signs show that the disease has come to a standstill. Under treatment the pulse-rate is definitely quickened, and remains so as long as the tuberculin is continued.—(See also TUBERCULOSIS, PULMONARY.)

REFERENCES.—[1]*Münch. med. Woch.* May, 1907; [2]*Gaz. deg. Osped.* 1907, No. 72; [3]*Ibid.* 1907, No. 27; [4]*Deut. med. Woch.* 1907, No. 39; [5]*Berl. klin. Woch.* 1907, No. 6; [6]*Presse Méd.* June 5, 1907; [7]*Bull. d. l'Acad. de Méd.* Oct. 1, 1907; [8]*Progrès Méd.* 1907, No. 11; [9]*Brit. Med. Jour.* April 20, 1907; [10]*Sem. Méd.* 1906, No. 46; [11]*Roussky Vratch*, 1906, No. 16; [12]*Ibid.* 1906, No. 19; [13]*Brit. Med. Jour.* Sept. 8, 1906; [11]*Münch. med. Woch.* 1907, No. 36; [15]*Ibid.* 1907, No. 34; [16]*Arch. Internat. de Pharmacodyn. et de Thèr.* 1907, vol. xvii. fasc. 1, 2; [17]*Berl. klin. Woch.* 1907, No. 37; [18]*Soc. Biolog.* July 20, 1907; [19]*Deut. med. Woch*, 1907, No. 40; [20]*Ibid.*; [21]*Rev. Méd. de la Suisse Rom.* June 20, 1907; [22]*Ibid.*; [23]*Ibid.*; [24]*Ibid.*; [25]*Ann. d. Mal. d. Organ. Genito-Urin.* 1906, No. 13, in *Ther. Gaz.* 1907, No. 1; [26]*Rev. de Thér. Med.-Chir.* Feb. 1907; [27]*Scot. Med. and Surg. Jour.* 1907; [28]*Münch. med. Woch.* 1907, No. 3; [29]*Von Sydow Hygeia*, 1906, in *Med. Chron.* Feb. 1907; [30]*Progrès Méd.* May 18, 1907; [31]*Berl. klin. Woch.* 1906, No. 44; [32]*Deut. Zeits. f. Chir.* Bd. lxxxiv. in *Centr. f. Chir.* 1907, No. 3; [33]*Zeits. f. Tubercul.* Dec. 1906, in *Brit. Med. Jour.* Mar. 2, 1907; [34]*Münch. med. Woch.* 1907, No. 43.

ANTITOXIC SERA.

E. W. Goodall, M.D.

J. Henderson Smith[1], in an investigation on the absorption of antibodies from the subcutaneous tissues and peritoneal cavity, using the antibodies coli-agglutinin, antitetanolysin, and diphtheria antitoxin, came to conclusions which he summarizes as follows:—

1. Antibodies in general are absorbed very slowly from the peritoneal cavity in lower animals, and from the subcutaneous tissues in man and animals. Absorption from the latter is not complete until at least two or three days have elapsed.
2. The amount of antibody present in the general circulation at any one time after intraperitoneal or subcutaneous injection is very much less than the amount injected.
3. Clinically, in urgent cases of disease, to inject antibodies subcutaneously is not only to lose two or three days' time before the full action can be obtained, but to reduce the amount of action that the dose injected can have.
4. By intravenous injection the maximum amount of action is obtained at once.

The author remarks: "The clinical bearing of these results may be briefly pointed out. It is generally admitted that in advanced cases of diphtheria, or other diseases where antisera are commonly employed, it is desirable to introduce into the system as quickly as possible as much as possible of the appropriate anti-serum. Any, even the shortest, delay is to be avoided. If we inject hypodermically we are losing time. Two or three days elapse before the injection is fully absorbed, and even then the amount actually circulating at one time is very considerably less than we may obtain by other means. It seems clearly indicated that in all urgent cases intravenous injection should be performed. It would be well to follow this up by a subcutaneous injection also, in order that the antitoxin slowly absorbed from the tissues may counteract the rapid loss after the intravenous injection. The amount in the circulation could thus be maintained at a higher level for a longer time."

From time to time cases have been reported in which unusual effects have followed the injection of serum. In most instances when any reaction occurs which is due to the serum itself, apart from the antitoxic quality it possesses, the reaction takes place several days (seven to fourteen) after the injection. Commonly the reaction consists of an erythematous rash and pyrexia, though in some cases there is also slight arthritis. Now the serum-reaction may either be hastened, or consist of symptoms not commonly met with. When hastened it may occur within a few minutes or hours of the injection, in which case it has been termed an "immediate reaction," or it may occur the day after the injection and on any day up to the usual date (seventh day); it is then called an "accelerated reaction." The group of symptoms of the accelerated reaction is usually the same as that of the ordinary reaction. But an immediate reaction not infrequently consists of much more severe symptoms, high temperature (up to 105° F.), a rigor, and collapse. Fortunately the occurrence of an immediate reaction is rare.

But the point concerning these abnormal reactions which it is most necessary to remember is, that they are limited almost entirely to patients who have been treated with serum some weeks, months, or even years before. Usually the cases in which they are observed are cases of relapses or second attacks of diphtheria; but they have been known to occur where the serum has been given for different purposes on the two different occasions. Hence one is somewhat chary of giving second injections of serum at a considerable period of time after the first; and if one is obliged to give serum under such circumstances, it is well not to give a large volume of it.

It should be pointed out that to give repeated injections of serum daily for several days does not produce an abnormal reaction; the essential factor seems to be that there shall be an interval of time of considerable length between the primary injection (or series of injections) and the secondary injection (or series)[2].

The condition is known as hypersensibility, hypersensitation, or anaphylaxis. It can be produced experimentally in animals, and may be transmitted by a female to her offspring.[3]

REFERENCES.—[1] *Jour. Hyg.* April, 1907; [2] Papers by Currie, *Jour. Hyg.* Jan. 1907, and Goodall, *Ibid.* July, 1907; [3] Rosenau and Anderson, *Bull. No.* 29 *and* 36 *Hyg. Lab. U.S. Pub. Health and Mar. Hosp. Service, Washington.*

OPSONINS AND VACCINES.

BY

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OPSONINS.

THE opsonic index of any given blood is the figure which represents the phagocytic activity of its serum as compared with that of a normal serum. This is accomplished by mixing in a pipette equal parts of a bacterial emulsion, washed leucocytes, and the serum to be tested; incubating this mixture for a definite period at body temperature; and finally counting the bacteria ingested by a certain number of leucocytes. Two tests are made in this manner: one with the patient's serum, and the other with the serum of a healthy person to serve as a control, the same bacterial emulsion and leucocytes being, of course, used for both. The following description and illustrations of the method are taken from Da Costa's article in the *American Journal of the Medical Sciences* for July, 1907:—

Special Apparatus.—A small wooden stand (*Fig.* 1) for holding tubes containing the various fluids. Wright's tubes for collecting the bloods (*Fig.* 2), made of glass tubing about 5 mm. in diameter. Strong test tubes 9 mm. in diameter and about 7 cm. in length, for containing and centrifugalizing the leucocytes and the bacterial emulsion. Mixing pipettes (*Fig.* 5), drawn from glass tubing 5 to 7 mm. in diameter, and fitted with a rubber nipple. Centrifuge, which should be a high speed electric one if rapid and accurate work is to be done. Watch glasses, slides, stains, and the necessary bacterial cultures.

Collecting the Blood and Separating the Serum.—The Wright's tube is filled to about two-thirds of its capacity (*Fig.* 3), after which the straight portion is sealed in a flame and allowed to cool; the blood is then shaken into the body and the straight end of the tube, and the curved end is sealed; the blood may now be centrifugalized to separate the serum (*Fig.* 4), or may be placed in an incubator and allowed to separate by clotting. At the time of the test the tube is broken after being scored by a file, and the serum removed with the pipette.

Preparing the Bacterial Emulsion.—In the case of staphylococcus a few cubic centimetres of normal saline solution are poured into a culture tube containing a twenty-four hours' growth on an agar slant. The resulting emulsion is well shaken, and clumps removed by centrifugalizing. The number of bacteria are indicated by the degree of opacity of the emulsion, and can only be estimated in this way after a good deal of experience. An emulsion of the correct density is one which allows the phagocytosis of about six cocci by each leucocyte.

Obtaining the Washed Leucocytes.—At least ten drops of blood are collected in a test-tube containing 10 cc. of normal saline, to which 1·5 per cent of sodium citrate has been added to prevent clotting.

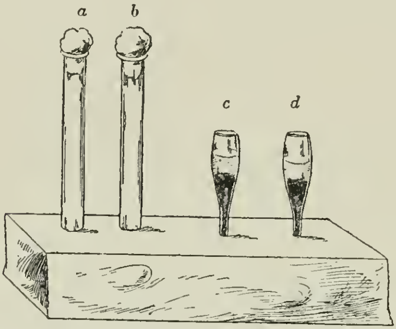

Fig. 1.—Test-tube rack; *a*, bacterial emulsion; *b*, washed leucocytes; *c*, patient's serum; *d*, control serum.

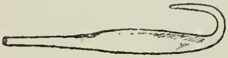

Fig. 2.—Wright's tube.

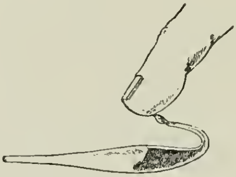

Fig. 3.—Method of collecting the blood with Wright's tube.

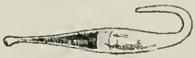

Fig. 4.—Serum and clot after centrifugalization.

Fig. 5.—Mixing pipette.

The mixture is then centrifugalized until a compact sediment of corpuscles is thrown down; the supernatant clear fluid is then removed with a pipette till only the red corpuscles remain, overlaid by a thin grey film of leucocytes, which must on no account be disturbed when drawing off the supernatant fluid. The layer of leucocytes and upper part of the erythrocytes are now sucked up in another pipette (*Fig.* 6) and removed to a small test tube, and well mixed by alternate suction and expulsion with a pipette.

Measuring, Mixing, and Incubating the Units.—A mark is made on the capillary stem of the mixing pipette about 4 cm. from its tip, the capacity of the tube between these two points being taken as the unit of volume for the patient's serum, the washed leucocytes, and the bacterial emulsion. Having placed these in their rack in the order illustrated (*Fig.* 1), the rubber nipple of the pipette is compressed and its point plunged into the bacterial emulsion, which, by very cautiously relaxing the pressure on the nipple, is slowly sucked up to the exact level of the unit mark; the point of the pipette is then removed from the emulsion, wiped dry with a bit of cotton, and, by again carefully releasing the pressure, a small column of air is aspirated. This accomplished, a unit of washed leucocytes is

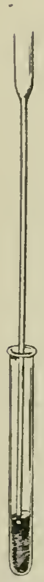

Fig. 6.—Method of aspirating the washed leucocytes.

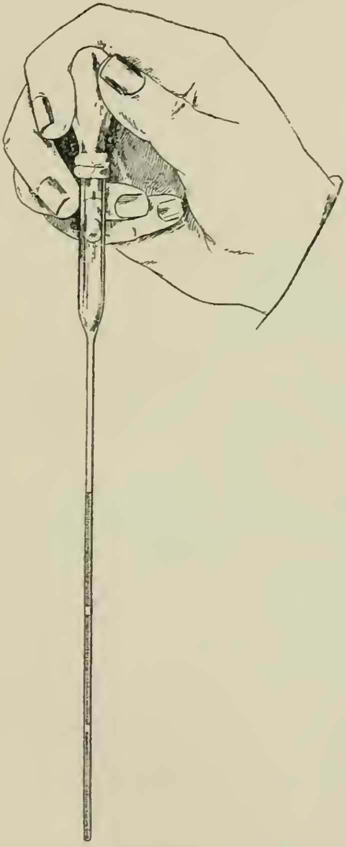

Fig. 7.—Mixing pipette containing the units of bacteria, washed leucocytes, and serum.

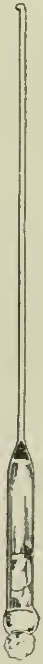

Fig. 8.—Mixing pipette containing the mixed units ready for incubation.

similarly sucked into the pipette, then a second column of air, and finally a unit of the serum to be tested, the tube now containing equal units of bacterial emulsion, washed leucocytes, and the patient's serum, each separated by a partition of air (*Fig.* 7). These are now mixed by sucking them up into the expanded portion of the pipette, where they are thoroughly agitated and commingled by alternately squeezing and relaxing the pressure on the nipple, which should be manipulated with the greatest delicacy, in order to avoid sudden oscillations of the liquid and its accidental escape into the "nipple end" of the tube. When the admixture is completed, the point of the pipette is sealed in a flame, after which the nipple may be removed without risk of disturbing the column of contained fluid (*Fig.* 8). This manner of mixing the units is preferable to mixing them according to the original technique, by alternately expelling the contents into a watch crystal and sucking them up the tube again. No better mixture is obtained by this older method, by the employment of which many leucocytes are lost and myriads of small air bubbles are prone to form in the liquid, despite one's care to prevent such accidents. When sealed, the pipette is placed in an incubator, where it is kept for exactly fifteen minutes at a temperature of 37° C. A second pipette is filled in an identical manner, with equal units of the same bacterial emulsion, washed leucocytes, and the control serum from a presumably healthy person, and incubated in the same way.

Preparing and Examining the Stained Films.—After incubation the straight stem of each pipette is notched with a file and broken off, while to the other end is fitted a rubber nipple; the contents of the pipettes are then blown out upon separate glass slides or crystals, and each thoroughly mixed with a platinum loop, so as to distribute the cells throughout the fluids. Films prepared from these specimens, either with cover-glasses or with slides, according to one's preference, may be stained with any good double stain, the subsequent examination being made with a $\frac{1}{12}$ inch oil-immersion objective. In the Jefferson laboratory Wright's modification of Leishman's stain has given the clearest differentiation of the bacteria and their cellular assailants.

The final calculation of the opsonic index is based upon the enumeration of the bacteria found within at least fifty consecutive polynuclear neutrophiles in a film made of the specimen from the patient and in one from the control fluid. In making this estimate, the bacteria simply clinging to the peripheries of the cells (not enclosed by them) were not included. Such groups of bacteria, however, were noted and recorded as "attached bacteria," for their appearance is most suggestive of an early phase of phagocytosis on the part of the leucocytes to which they adhere. The two totals of phagocyted bacteria having been determined, that of the patient's specimen is divided by that of the control's, to express the opsonic index of the blood under examination. Thus if, say, 200 staphylococci were found in 50 of the patient's phagocytes and 400 in the same number of the control cells, the index for this ratio would read 0·5, or 200 to 400. It is a good plan also to calculate the percentage of phagocytic polynuclears, as advised by Simon, thus obtaining an index comparable with and controlling the opsonic figure.

Technique.—Jeans and Sellards[1] obtain a tubercle emulsion free from clumps and particles of broken bacilli, by rubbing up the living bacilli in a little salt solution with a platinum wire, then sterilizing by exposure to direct sunlight for ten hours. This method of sterilization does not cause clumping. They mark the pipettes with a glass hair dipped in Brunswick black, which makes a fine clear line instead of the coarse marks of a grease pencil.

Campbell[2] finds that the process can be shortened by keeping a stock of ready stained tubercle bacilli; these are stained in cold carbol fuchsin for twenty-four hours and then well washed; they are taken up by the leucocytes like ordinary bacilli. A further advantage of this method is that much better films can be obtained, as no heating is necessary.

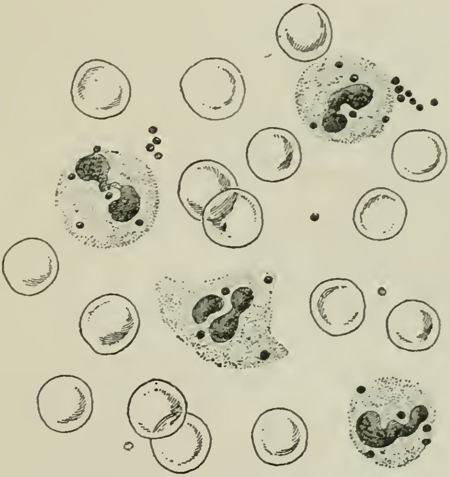

Fig. 9.—Microscopic field of a specimen prepared from the incubated units. Note the staphylococci ingested by and adherent to the phagocytes; the latter are not included in the enumeration upon which the calculation of the opsonic index is based.

Many observers call attention to the inaccuracy of the methods at present used, especially in the counting of the leucocytes and the contained bacteria. Different parts of the same film may give greatly varying counts in spite of every precaution to secure accuracy. Moss[3] found that even if 300 leucocytes were counted there was still an error of 10 per cent.

Preparation and Dose of Vaccines.—There is now general agreement that the vaccine should be made from a culture of the actual micro-organism taken from the patient, an exception being made, however, in the case of the tubercle bacillus. A full account of the preparation and standardization of vaccines is given by Von Eberts and Hill[4], who give the following useful table :—

Organism	Media	Age of culture: Hours	Devitalizing Temperature. One hour	Dosage in millions
Staphylococcus ..	agar	12 to 18	60° C.	100 to 500
Streptococcus ..	agar	24	58° C.	10 to 20
Pneumococcus ..	serum	24	58° C.	50 to 100
Bac. coli comm. ..	agar	8	54° C.	50 to 100
Bac. pyocyaneus ..	agar	12	54° C.	50 to 100
Gonococcus ..	hydrochl. agar	6	60° C.	10 to 20
Meningococcus ..	blood agar	18	60° C.	10 to 20

The main points in the manufacture of a vaccine are : (1) Isolation of the organism in pure culture ; (2) Emulsion of the culture in saline solution ; (3) Determination of the number of micro-organisms in a cubic millimetre of the emulsion (Wright's method) ; (5) Standardizing ; (4) Devitalizing the emulsion ; (6) Testing devitalization by making a control culture and incubating for twenty-four hours.

Dosage of Tuberculin (*Koch's T.R.*).—The dose for an adult varies from $\frac{1}{2000}$ mgram to $\frac{1}{800}$, always commencing with the smaller dose. On this point Sir. A. E. Wright[5] gives the following useful rules for guidance : (1) Never to advance to a larger dose until it has been ascertained that the dose which is being employed is too small to evoke an adequate response ; (2) If the opsonic index twenty-four hours before inoculation is subnormal, and twenty-four hours after inoculation is still lower, then the dose is excessive ; (3) If the opsonic index is raised twenty-four hours after the inoculation, but falls back in a week or ten days to where it was, then the dose is too small ; (4) If there is a slight initial fall after inoculation, but after ten days the index is higher than at the outset, then the dose is appropriate.

Rivière[6] recommends the following dose of tuberculin in the case of children : 1 year old, $\frac{1}{12000}$ to $\frac{1}{8000}$ mgram ; 5 years, $\frac{1}{4000}$ mgram ; 10 to 12 years, $\frac{1}{3000}$ mgram.

Opsonic Index in Diabetes Mellitus.—Da Costa[7] found that in sixteen cases of diabetes mellitus the opsonic index to *Staphylococcus pyogenes aureus* varied from 0·34 to 0·72, with an average of 0·62. This low index is interesting in view of the tendency of such patients to bacterial cutaneous infections.

Opsonic Index in the Insane.—Shaw[8] examined the opsonic index to tubercle in thirty insane patients, and found that it varied from 0·65 to 1·23, the average for the thirty cases being 0·88.

Opsonic Index in a Fasting Man.—Charteris[9] estimated the opsonic index to *Staphylococcus* and to *Bacillus typhosus* in a man who fasted for fourteen days : the index, which was taken daily, remained within normal limits.

Opsonic Index of Mother Compared with that of Child, also Opsonic Power of Blood Serum Compared with Milk.—Turton and Appleton[10] compared the opsonic power of the mother's blood serum with that of her milk, and found that while the opsonic power of the serum is normal, that of the milk gives an index of 0·1 or less ; the index of the child is about 0·5 ; in all cases the organisms with regard to which the index was determined were tubercle bacillus and staphylococcus.

VACCINE THERAPY.

During the past year many hundreds of cases have been recorded of patients suffering from infective diseases cured by inoculations with emulsions of dead micro-organisms or tuberculin, these inoculations being for the most part regulated by the opsonic index. Among other cases are two of **Streptococcic Septicæmia.** In the first, that of Barr, Bell, and Douglas,[11] in which the patient failed to improve with inoculations of streptococcic vaccine obtained from extraneous sources, she improved immediately, and eventually made a complete recovery after inoculations of streptococcic vaccine made from the organism found in her blood : the dose varied from six to twelve and a half millions. In the second case, reported by Sutcliffe and Bayley,[12] the dose varied from ten to fifty millions of streptococci, and the patient made a complete recovery.

Turton and Parkin[13] publish an interesting series of thirty-four cases treated by the injection of bacterial vaccines. In several cases they were able to record the fact that while stock vaccines were without effect, a vaccine made from the exact strain of micro-organism causing the infection brought about a speedy cure.

Von Eberts and Hill (op. cit.) record fourteen cases treated by bacterial vaccines, among them two cases of **Epidemic Cerebrospinal Meningitis,** which recovered.

The diseases which have during the past year been successfully treated by means of bacterial vaccines are too numerous to record here, but the most favourable cases appear to be : (1) **Localized Tuberculous Diseases,** e.g., adenitis, early phthisis, arthritis, cystitis, lupus ; (2) **Staphylococcal Infections,** e.g., furunculosis, acne, boils, carbuncles ; (3) **Mixed Infections,** e.g., old sinuses, empyema, etc. ; (4) **Cystitis** due to *Bacillus coli* ; (5) **Gonorrhœal Arthritis.**

REFERENCES.—[1]*Johns Hop. Hosp. Bull.* Aug. 1907 ; [2]*Brit. Med. Jour.* April 13, 1907 ; [3]*Johns Hop. Hosp. Bull.* July, 1907 ; [4]*Amer. Jour. Med. Sci.* July, 1907 ; [5]*Lancet,* Aug. 24, 1907 ; [6]*Brit. Med. Jour.* April 13, 1907 ; [7]*Amer. Jour. Med. Sci.* July, 1907 ; [8]*Lancet,* May 11, 1907 ; [9]*Ibid.* Sept. 7, 1907 ; [10]*Brit. Med. Jour.* April 13, 1907 ; [11]*Lancet,* Feb. 23, 1907 ; [12]*Ibid.* Aug. 10, 1907 ; [13]*Ibid.* Oct. 27, 1907.

THE VALUE OF FÆCAL EXAMINATION IN CHRONIC DISEASES.

BY

ERNEST YOUNG, M.D.

Although the value of coprology is becoming more fully recognized, as attested to by the increased attention paid to the subject in clinical text-books, and the able researches of Schmidt, Strasburger, Vaughan-Harley, and others, the subject has, nevertheless, not received that practical attention from the profession at large which it undoubtedly deserves. This, in all probability, is due to the fact that the methods usually described involve—if carried out in their entirety—a great deal of time, an expert knowledge of chemistry and microscopy, more or less elaborate apparatus, and carefully weighed test-meals, thus placing the matter quite outside the province of the general practitioner. It may also be observed, that although various authors on the subject describe most adequately the characteristic features of animal parasites, and the pathological appearances of the fæces in acute conditions, such as cholera, typhoid, dysentery, etc., they pay relatively little attention to chronic conditions, and give but the scantiest suggestions as to the *practical* value of the inferences derived from fæcal examination in regard to diagnosis and treatment.

The aim of this article will be to present a method of fæcal examination specially applicable to chronic conditions, such as gastro-intestinal disorders, and toxæmias of the nature of gout, rheumatism, rheumatoid arthritis, etc. While emphasizing the value of the method as an aid to diagnosis, attention will be chiefly devoted to its efficacy in indicating rational dietetic and other treatment.

In presenting this method, the writer lays no claim to originality, other than to have evolved from the essentials of the subject and his own experience, a simple unpretentious scheme, applicable for adoption by any general practitioner possessing an elementary knowledge of the microscope.

The scheme is entirely qualitative in character, occupies only five to ten minutes for the examination of an average specimen, and, while not professing to be more than the bare minimum on which satisfactory inferences as to diagnosis and treatment may be built up, will nevertheless, if carried out in a thorough manner, prove sufficient for all practical purposes.

The photomicrographs which accompany this article are a selection taken from the fæces of the writer's patients, and although the limited number of the illustrations debars a very comprehensive view of the subject, they will probably prove sufficient to form a basis for its intelligent pursuance.

The writer cannot refrain from pointing out a most powerful argument in favour of coprology, namely, its helpful mental effect upon the patient. The obvious common sense of fæcal examination in deciding the condition of the alimentary tract, and what foods the patient can and can not digest, appeals strongly to his intellect, and such a patient will prove far more amenable to dietetic restrictions based upon these clinical measures, than when similar restrictions are prescribed empirically. Moreover, unreliable patients, in whom "the spirit is willing, but the flesh is weak," will be less likely to transgress, since, as Strasburger,[1] in discussing such patients, truly says, "The impression is never effaced if an error in diet is revealed to the patient from the examination of the fæces."

TECHNIQUE.

Specimens of Fæces.—The patient should send, previous to consultation, a portion of his dejecta about the size of a small walnut, enclosing the same in a wooden pill-box lined with grease-proof paper. If the fæces are liquid in character, about the same quantity should be placed in a bottle, care being taken to tie the cork in, since, if much fermentation be present, the gas formed may force the cork out during transit. The box or bottle should be labelled with the patient's name.

Apparatus Required.—(1) Microscope; (2) Thin glass slips (3 in. by 1 in.) with ground edges; (3) Pipette; (4) Drop bottle containing Lugol's solution; (5) Box of large wooden matches; (6) Red and blue bibulous litmus paper; (7) A few porcelain dishes about four inches square; (8) A spatula.

Macroscopical Technique.—This is but trifling in character. The specimen should be placed in a porcelain dish, and, after noticing any obvious naked-eye features and determining its chemical reaction, it should be crushed flat with a spatula (if hard), in order to obtain a wider field of observation.

Chemical Reaction.—Normal fæces are neutral, faintly acid, faintly alkaline, or amphoteric in reaction. A pronounced acidity or alkalinity points to fermentation or putrefaction respectively, and will be further discussed under these headings.

The following is a convenient method for testing the reaction. Gather a compact lump of fæces the size of a small pea on the tail end of a wooden match. On one side of the lump press a slip of blue litmus paper, on the opposite side a red slip, and allow to remain for a few minutes. Each slip acts as a filter paper, keeping back the colouring matter of the fæces from the outer surface of the slip. If neutral, there will be little colouration of either slip: if amphoteric, a red spot will appear on the blue slip, and a blue spot on the red slip: while if the fæces are definitely acid or alkaline in character, a corresponding but more pronounced colour will appear on one or the other slip, in accordance with the reaction.

Microscopical Technique.—The bulk of the work is most easily accomplished with low-power objectives, preferably about 1½ in.

A 1-in. or 2-in. objective may, however, be used if preferred, but it is advisable not to change from one objective to another indiscriminately. That is, let the worker try all powers if he so desires, but having made up his mind as to which power he prefers, let him adhere to his choice, as the constant use of a familiar objective greatly facilitates mental comparison as to the relative size and quantity of the various constituents observed in the microscopical field.

It must be mentioned that a polariscope, with a selenite slide, preferably red and green, forms a most valuable adjunct to the microscope, and may be fitted to the latter at comparatively small expense. Its clinical value will be referred to later.

Preparation of Slide.—With the tail end of a match remove a portion of the fæces about the size of a split pea, endeavouring to include a little mucus or any obvious pathological material which may be present. Place the portion of fæces in the centre of a glass slip (3 in. by 1 in.), lay a second slip (not a cover-glass) on top, and press the two firmly and evenly together with finger and thumb, when the fæcal mass will spread out into a thin film. The slide is now ready for examination. If the fæces are very hard, the selected portion should be soaked in water for a few minutes previous to preparing the slide. If, on the other hand, the specimen is quite liquid in character, a small portion of its sediment should be taken up by means of a pipette and placed on a glass slip as before, which should be covered, however, in this instance, by a cover-glass instead of another glass slip, since liquid fæces require but the slightest pressure to make them spread out into a film.

With the exception of liquid specimens, however, the method of using two glass slips in place of a slip and thin cover-glass in preparing a slide has obvious advantages, inasmuch as the former method takes less time, and produces a larger and also a thinner film, owing to the firmness with which the slips may be pressed together. Low-power objectives will easily focus through the two slips, and objectives of higher power, such as $\frac{1}{6}$ in.—which is very useful in studying some of the obscurer details—may now be obtained to focus through the same thickness. The examination of the specimen concluded, the glass slips should be slid apart, and placed in a covered jar containing an antiseptic solution, previous to being cleansed.

TRIAL DIETS.

If the first examination of the fæces shows only a trifling deviation from the normal, it is not necessary to radically change the patient's diet, slight alterations to correct what is at fault in this respect, combined with such other therapeutic measures as the physician may deem advisable, being all that is necessary. If, however, the first examination proves that the fæces are distinctly pathological in character, it is imperative to place the patient on a trial diet of known quantity for some days—such a diet as a healthy person should be able to deal with adequately—and then examine the fæces again. Only by these means can a fair judgment of the condition of the gastro-intestinal tract be formed, inasmuch as a patient's description as to the quantity, etc., of food he has taken previous to consultation is frequently vague and unsatisfactory. The method of weighing each article of food is often impracticable, and generally unnecessary, except in extreme cases. For cases of average severity—provided always that careful instructions are given—a trial diet such as the following will prove quite satisfactory for diagnostic purposes. Two points respecting it may be emphasized, viz., the meals must be five hours apart, and the hot water must be taken at the time directed.

Trial Diet, No. 1.—*Breakfast,* 8.30 *a.m.*—A small whiting, four or five Huntley and Palmer's breakfast biscuits, butter (the size of a cobnut), a breakfast-cupful of tea, with milk and sugar.

Lunch, 1.30 *p.m.*—A mutton chop (loin), a tablespoonful of cauliflower, spinach, or stewed celery, two tablespoonfuls of well-cooked rice or semolina pudding, four or five biscuits, butter, a glass of water.

Dinner, 6.30 *p.m.*—As at lunch, but substituting about six ounces of rump or fillet steak for the mutton chop.

About one-and-a-quarter hours before each meal the patient should slowly sip half-a pint of hot water. This cleanses and stimulates the stomach for the succeeding meal, and, in addition, makes up the requisite daily amount of fluid necessary for physiological equilibrium.

Before commencing the above diet, an aperient strong enough to cause a thorough evacuation of the bowels should be given, followed, if constipation is present, by milder aperients to secure a daily action of the bowels.

After taking the trial diet for a week, the fæces should be examined again, and alterations in diet and other measures be prescribed in accordance with the results.

In a healthy person, the fæcal residua from such a diet should contain no trace, or but a very minute quantity, of undigested meat or starch, and no signs of abnormal fermentation, etc.

If, for any reason, it is advisable to make an examination of the fæces within a few days of the commencement of the trial diet, it is well, as a precautionary measure, to instruct the patient to take two or three charcoal biscuits, and not to bring a specimen for examination until a day subsequent to passing the resulting black motion. This is important, since Vaughan-Harley and Goodbody[2] have shown that in many patients, in spite of a daily motion, there is a long delay in transit of food along the alimentary canal, so that before the appearance of the charcoal, the patient may pass one or more motions belonging to the previous diet.

In very severe cases, such, for instance, as an advanced case of dilatation of the stomach, where the preliminary fæcal examination reveals abundance of undigested food, fermentation, and probably catarrh of the gastro-intestinal tract, the trial diet described is obviously impracticable, and it is advisable to place the patient upon the simplest and most digestible diet which can be devised. This, in the writer's opinion, is a diet of carefully cooked lean minced beef, as first advocated by Salisbury, and may be referred to as :—

Trial Diet, No. 2.—In this diet the patient is fed *exclusively* on minced beef, commencing with three or four ounces, and gradually working up to six or eight ounces three times a day. As in the former diet, the meals should be five hours apart, and half-a-pint of hot water should be sipped one-and-a-quarter hours previously. The fæces should be examined frequently, and, as the fermentation and catarrh decrease, starch and other foods may be cautiously added. It need hardly be said that the patient must rest a great deal during the early stages of this diet, and, if very weak, it is advisable to confine him entirely to bed.

Chief Elements of Diagnostic Importance.

It may be well, before proceeding to describe the macroscopical and microscopical appearances of the various elements of diagnostic importance contained in the fæces, to enumerate what these elements are :—(1) Muscle fibres of meat, fish, etc. ; (2) Connective tissue and elastic fibres ; (3) Remains of wheat and other starches, viz., portions of pericarp and seed-layers, starch granules, gluten granules, etc. ; (4) Remains of vegetable tissues ; (5) Gas bubbles, due to fermentation ; (6) Yeast, and other fungi ; (7) Fats ; (8) Triple phosphate and calcium oxalate crystals ; (9) Mucus ; (10) Blood.

There are several other elements found in fæces, such as pigment from Lieberkuhn's and Brunner's glands, various crystals other than those enumerated above, intestinal sand, etc., but inasmuch as they are, relatively, of no diagnostic importance, they will not be described.

Macroscopical Examination.

This portion of the subject will be treated very briefly, inasmuch as the limited time at the disposal of the general practitioner should be devoted chiefly to microscopical examination, which is capable of detecting in a more rapid and more certain manner nearly all the features noted in macroscopical examination. Thus, the microscope will immediately detect remains of meat and starch foods which, macroscopically, can only be detected as a rule (lienteric stools excepted) after more or less prolonged grinding of the fæces with water and, perhaps, subsequent centrifugalization. These remarks do not apply to obvious macroscopic elements, such as seeds and skins of fruit, strings of mucus, and fresh red blood from the rectum, all of which may readily be detected by the naked eye without previous preparation, although, as has been indicated, it is always well to crush the specimen (if hard) in a porcelain dish with a spatula, so as to obtain a larger field for observation.

Having determined the presence or absence of the above features, the only remaining macroscopic essentials are to note the *consistency*, *colour*, and *odour* of the specimen.

Consistency.—The specimen may be hard and scybalous, owing to constipation, or it may be pultaceous or liquid in character, owing to the presence of an abnormal amount of water, fat, swollen vegetable tissue, or mucus. A rough idea as to whether the fluid nature of the stool is due to transudation, exudation, or defective absorption, may sometimes be gathered from the presence or absence of one or more of the above features. Thus, if a fluid stool contains little or no mucus or other inflammatory product, the fluidity is generally due to transudation; if mucus is present in large amount, the fluidity is probably caused by exudation; while if much undigested food, especially fat, is present, it points to defective absorption.

Colour.—In estimating the colour of fæces, it is important always to break up the specimen, since the colour of the interior often differs materially from the exterior, owing to the darkening of the latter from exposure to air.

Diet plays an important part in influencing colour, even in health. Thus, the stools of normal adults on a mixed diet are dark brown; if meat preponderates in the diet, they are usually brownish-black, chiefly as a result of the conversion of the blood-colouring matter of the meat into hæmatin. If vegetables preponderate in the diet, the stools are yellowish-brown, or, if the vegetables partaken of are exceptionally rich in chlorophyll, such as spinach, etc., they may have a definite greenish hue. This green colour, however, may occasionally be due to bacteria. The clay-coloured fatty stools in biliary obstruction and pancreatic disease are well known. Typical clay-coloured stools have also been noted by various observers in diseases unaccompanied by biliary obstruction or pancreatic disturbance, but the discussion of these rare cases is outside the limits of this article. The yellowish-white stools produced by a milk diet are familiar to all practitioners, while the influence of certain drugs, such as bismuth, iron, calomel, rhubarb, senna, santonin, kino, etc., upon the colour of the fæces, is too well known to need describing.

The effect of fermentation has some influence upon colour, making the fæces appear lighter than they really are, owing to the highly refractive nature of the gas bubbles which are produced.

Blood produces a different colour according to its amount, and the part of the alimentary tract in which the bleeding takes place. Thus, if it occurs in the sigmoid or rectum, and is promptly discharged, it tends to retain its normal colour. It must not be forgotten, nevertheless, that blood from the small intestine may also be but little changed if very active peristalsis is present. With normal peristalsis, however, bleeding from the small intestine or stomach gives a tarry appearance to the stools, owing to the conversion of the hæmoglobin of the blood into hæmatin, the latter being conveniently determined by Teichmann's well-known test. It is important always to perform this test in doubtful cases, since the ingestion of large quantities of cocoa or certain fruits may produce an appearance very similar to disorganized blood.

Odour.—The odour of normal adult stools is chiefly due to indol, skatol, etc., derived from proteid decomposition, and is never unduly offensive. The stools in most pathological conditions are more or less offensive, although the odour is seldom distinctive, unless excessive decomposition of carbohydrates has taken place in the intestine, when the typical, penetrating, "sour" smell due to acetic and butyric acids prevails.

MICROSCOPICAL EXAMINATION.

Meat.—Well-digested meat foods present an amorphous, homogeneous appearance similar to a solid meat extract (see *Plate II, Fig. C.* B), the colour varying from orange-brown to pale creamy-yellow, according to the kind, or kinds, of meat ingested. If the meat has been perfectly digested, this colour is the chief distinguishing feature, since no muscular fibres can be detected as such microscopically.

In an average digestion, however, some small portions of muscular fibre are generally present, and, provided they are not excessive in amount, need not be regarded as pathological. The fibres, nevertheless, should not be larger than those indicated (*Plate I, Fig. B.* C) and the muscle striation should be practically indistinguishable. If masses of muscle fibre with well-marked striation are present (*Plate I, Fig. A.*), or even if fairly considerable quantities are present similar to A or B (*Plate I. Fig. B*), it indicates faulty proteid digestion in the stomach or small intestine, or both, provided always that only a reasonable quantity of meat has been taken, and that it has been carefully prepared. This is an important factor, since, even with a fair digestion, undigested meat may be present if it has been toughened by defective cooking. To determine whether this is so, it is only necessary to examine the muscle fibres with the polariscope, when, if polarization is present, it indicates imperfect cooking. *Per contra*, if polarization is absent, the fault lies in the digestion. This detection of imperfectly cooked foods in the fæces by means of the polariscope was mentioned by Cutter[3] more than twenty years ago, but despite its undoubted value the writer has never seen the method described in any existing clinical text-book.

It may be noted that beef is indistinguishable from mutton as far as the shape and size of their fibres are concerned. They may, however, be differentiated by colour, the muscle fibres of beef being orange-red, while those of mutton are pale yellow. Fresh pork fibres are larger and of a paler yellow than mutton fibres, and many of them show a peculiar constriction (*Plate VI, Fig. M.*, A). Fish and chicken fibres are cream-coloured.

Plate II, Fig. D, shows a typical specimen of undigested fried bacon, and is a powerful argument against allowing hard smoked or salted meats in dyspeptic conditions. While it may be admitted that mildly-cured hams and tongues are fairly digestible, the same remark does not apply to articles such as pressed beef or fried bacon (rendered additionally tough by frying). In fact, from experiments which the writer has made, he is convinced that the lean parts of such foods are seldom, if ever, thoroughly digested even by persons of normal digestive powers.

Elastic and connective tissue fibres both appear in the fæces after an ordinary mixed diet, but only the latter is of diagnostic importance. Microscopically, connective tissue is said to somewhat resemble mucus, but its striation is sufficient to distinguish it. Remnants of connective tissue may be disregarded unless present in large masses. Even then, if preserved meats, such as ham, etc., have been largely partaken of, its presence need excite no uneasiness, since even normal digestions reject the almost unaltered connective tissue present in this form of food. On an ordinary mixed diet containing fresh meat, however, a large quantity of connective tissue in the fæces is pathognomonic of disturbance in the gastric functions, since only the stomach is able to digest this constituent.

Carbohydrates.—To ascertain from the fæces how starch foods, such as bread, rice, etc., are being dealt with in the alimentary tract, the chief factors for consideration are :—(1) Is there any undigested starch ? (2) What is the condition of the proteid, aleurone, or gluten layer of the grain ?

1. Unless an excessive quantity of starch food is being taken, *undigested starch* is seldom found in abundance, even with a poor digestion. Strangely enough, rice—in spite of its universal acceptance as an easily-digested food—often leaves a greater undigested residue than a proportionate quantity of starchy food made from wheat flour, although this may probably be due to the fact that rice is frequently not cooked as thoroughly as it should be. Here, again, as already mentioned with regard to meat, the polariscope is an invaluable adjunct in determining whether the starch has been well cooked or not. If the starch granules polarize well the cooking has been imperfect. *Plate III, Fig. E,* shows a typical clump of undigested rice starch granules. Such granules are easy of detection microscopically if present in fair numbers, but the process may be facilitated, if desired, by staining with Lugol's solution, when the starch will become indigo black. Fæces containing an appreciable quantity of undigested starch are markedly acid, and generally contain evidence of fermentation. This will be more fully discussed later.

2. *The condition of the proteid, aleurone, or gluten layer,* which contains *the gluten or aleurone granules* (*Plate III, Fig. F,* and *Plate IV, Fig. G*), is the second important factor to consider in starch examination. Normally, few or none of these granules can be detected *in situ,* as in a good digestion they are readily dissolved out of the cell membranes. In gastro-intestinal disorders, however, they are generally more or less abundant. Being easy of detection, they form interesting landmarks as to a patient's progress, the size of the patches of granules *in situ* gradually decreasing as the digestion improves.

Another feature which must be mentioned in connection with starchy food is the various layers of the wheat or other grain, for it must be remembered that even the finest flour, although composed chiefly of starch grains, contains some portion of the layers of the pericarp and seed coats in addition, which being insoluble in the digestive juices invariably appear in the fæces. Since they bulk somewhat largely in the microscopical field in a mixed diet, they must be briefly described. A portion of the outer epidermal layer, with a few adherent hairs, is shown (*Plate II, Fig. C,* A), and a portion of the aleurone layer (*Plate III, Fig. F.*) For the microscopical appearance of the remaining layers, the reader cannot do better than consult the excellent "Atlas of Vegetable Tissues," by Greenish and Collin. Roughly, in all starches, these broken-up layers present the appearance—under a 1½-in. or 2-in. objective—of small patches of canvas, the size of the patches being influenced (lientery excepted) by the activity of the intestines: the more normal the peristalsis the smaller the patches into which the layers are broken up. It follows, therefore, that with deficient peristalsis, as in constipation, the patches will be relatively large.

Remains of Vegetable and Fruit Tissues.—The constituent elements of vegetables and fruits are easy of detection, the areolar tissue, spiral ducts, vascular bundles, pigment cells, etc., being unmistakable, although it is not always easy to determine the particular form of vegetable or fruit to which they belong. A few vegetables and fruits, however, are quite easy of differentiation, for instance *apples*, with their clear, almost transparent sacs of cellulose, and *peas*, with glistening palisade cells. (*See Plate VI, Fig. L.*) With a good digestion the cellulose walls in many vegetables become translucent and more or less broken down, while chlorophyll (vegetables such as spinach excepted) is frequently entirely destroyed. *Per contra*, in gastro-intestinal disturbance the patches of vegetable tissue are larger, the cellulose has an opaque "woody" appearance, and abundance of chlorophyll is found, while, if the patches of tissue have caused irritation of the bowel, they are surrounded by a halo of mucus.

Fermentation and Putrefaction.—Abnormal fermentation occurs in the small intestine, and depends upon the decomposition of undigested carbohydrate foods, principally starch, the organic acids produced (acetic, lactic, succinic, etc.) giving the specimen a marked acid reaction. If fermentation is fairly pronounced, its characteristic features are easily detected microscopically. The specimen is pervaded with gas bubbles (*Plate IV, Fig. H*), and presents a typical hazy, "greasy" appearance, owing to the presence of enormous numbers of bacteria and fungi. Of these fungi, yeast is easily detected as a rule with a $\frac{1}{6}$-in. objective. Undigested starch may frequently be detected on staining with Lugol's solution, but this is not invariably the case, since—as Fleiner[4] has shown—the undigested starch may occasionally be destroyed by the fermentation it produces. The detection of mild degrees of fermentation is not so certain, since gas bubbles may be scanty or apparently absent, despite an acid reaction and the presence of undigested starch. If, however, these two latter features are present, and flatulence is a prominent symptom, it is safe to assume that undue fermentation is taking place, and it should be treated accordingly.

Putrefaction is the term usually applied to proteid decomposition. This occurs chiefly in the colon, is much rarer than fermentation in the small intestine, and is difficult to determine microscopically. When putrefaction is pronounced, the fæces are markedly alkaline, and very offensive in odour, owing to the large quantity of indol formed, this same constituent also causing a marked excess of indican in the urine.

Fats occur in the fæces in the form of neutral fats, soaps, or fatty acids, the neutral fats being the most important pathologically. Normally, fats occur chiefly in the form of amorphous masses of soap, more rarely as crystals. Neutral fats should be almost entirely absent, and their presence in large quantities—unless an excess of fat has been taken as food—points to deficient absorption. Neutral fats appear either as colourless droplets, or as bile-stained irregular masses, the highly refractive droplets being easily distinguishable microscopically. In a normal digestion, when they appear simply in consequence of excessive ingestion, the droplets are small, all more or less the same size, and are evenly distributed, showing that emulsification has been good. In pathological conditions, however, the acid condition of the fæces, which may be present, prohibits good emulsification, and the droplets are irregular in size, and not evenly distributed. Fatty acids may be found as flakes, or in typical colourless sheaves of long needles. Soaps may occur as amorphous masses, or as needles, which are, however, shorter and thicker than fatty acid needles. The fatty stools of jaundice are, according to Strasburger,[5] almost entirely made up of soap needles.

Crystals.—The only crystals of importance are triple phosphate and calcium oxalate crystals.

Triple phosphate crystals (*Plate V, Fig. K*) are always present in normal fæces. If the fæces are markedly acid, they are either present in mutilated form (owing to the action of the acid), or entirely absent, as a result of being completely dissolved. In constipation, the crystals are unusually large. It is said that triple phosphate crystals have no pathological significance. The writer agrees with this statement as far as their presence is concerned, but is inclined to think that the same remark does not hold good with regard to their absence. Thus, in neurasthenia—even with a nearly normal reaction of the fæces—there is, almost invariably, an absence of triple phosphates, although if the case improves under treatment they gradually appear. *Per contra*, while the crystals are absent from the fæces, earthy phosphates are generally present in the urine, gradually disappearing as the crystals reappear in the fæces. It seems probable, therefore, that an absence of triple phosphates in the fæces—provided the latter are not markedly acid—indicates a deficiency of tone in the nervous system.

Calcium oxalate crystals are generally found in the fæces on a mixed diet containing vegetables, being particularly abundant after the ingestion of vegetables such as rhubarb and spinach. Of the three chief forms of these crystals (needle-shaped, rosettes, rhomboids), the rhomboid or "envelope-shaped" crystals are the most typical. The presence of the crystals in large numbers, if no considerable quantity of vegetable is being taken, is generally regarded as indicative of intestinal dyspepsia.

Mucus.—With the exception of the thin "varnish-like" layer occasionally observed on the surface of hard fæcal matter, the presence of mucus in the fæces, whether macroscopically or microscopically evident, must be regarded as pathological, and due to intestinal catarrh. It is said that the mucus found in fæces is generally derived from the large intestine, inasmuch as, if peristalsis is not unduly active, any mucus from the small intestine becomes digested in transit. Mucus generally appears as transparent blobs or shreds, but may be stained with bilirubin or biliverdin, and may contain epithelial cells. The supposed significance of these various types of mucus in relation to their site of origin is too lengthy a subject to be discussed here, the same remark applying to chemical reaction of mucus, and its determination by washing the fæces. An excellent summary of these features is given by Vaughan-Harley and Goodbody.[6] Practically, however, in order to establish the presence of mucus, and, therefore, the existence of intestinal catarrh, the writer has found that it is only necessary to make a careful microscopical examination of patches of irritant débris, such as vegetable tissue, undigested meat, etc., which may be present in the fæces, when, if intestinal catarrh is present, many of these irritant patches will be found to be surrounded by a halo of more or less liquefied mucus.

The Frequency of the Fæcal Examination must be determined by the nature of the case. In severe cases it should be performed about twice a week; in milder cases once every week or fortnight is generally sufficient. It need hardly be mentioned that careful notes should be taken at each examination, so that the patient's progress may be accurately determined.

PRACTICAL APPLICATION OF FÆCAL EXAMINATION WITH REGARD TO TREATMENT.

Having determined the reaction, the presence or absence of undigested food, abnormal fermentation, or catarrh, etc., in the fæces, we have the necessary data for applying remedial measures in a rational way, these measures, however, being necessarily influenced by the environment of the patient.

Digestive disorders, such as chronic gastritis, gastric atony, atonic dilatation, and hyperchlorhydria, may be first considered, chiefly in relation to the two most important foods, viz., meat and starch. If abnormal quantities of these foods are present in the fæces in an undigested form, we may employ one or more of the following measures to remedy the defect. Thus, we may either (1) Reduce the quantity of the food in question; (2) Give it in a more easily digested form; or (3) Aid its digestion by artificial ferments.

In hyperchlorhydria it is seldom necessary to reduce, or otherwise alter, the *meat food*; but in the other diseases enumerated it is often advisable to have the meat foods carefully minced, since the patient is thus able to partake of, and digest, a much larger quantity of meat than he would otherwise do. Ferments, such as **Pepsin**, or, even better, **Ingluvin** (since it is active in acid or alkaline media), are also occasionally useful as a temporary crutch to proteid digestion, despite assertions as to their comparative uselessness.

Undigested *starch*, with consequent abnormal fermentation, is, however, a far more important factor than undigested meat, inasmuch as the fermentation renders useless a considerable portion of the food ingested, in addition to causing various symptoms of auto-intoxication. Here again, the obvious measures are, either to reduce the quantity of starch food, give it in a super-cooked form, such as biscuits or very crisp toast, or aid its digestion by ferments, such as **Taka-diastase.** In severe cases, where a great deal of fermentation and catarrh are present, it is often advisable to prohibit starch food altogether for some days, so as to deprive the organisms of abnormal fermentation of the pabulum necessary for their existence. This measure is also beneficial in another way, for the practitioner will find that if much undigested meat, as well as starch, is present, the withdrawal of the latter for some days is followed by improved digestion of the former, for it cannot be questioned that excessive decomposition of starches favours excessive decomposition of proteids, although the converse is not equally true.

With regard to the medicinal treatment of gastro-intestinal fermentation, many of the drugs advocated have little or no influence, although others are of undoubted value. Personally, the writer has had the best results from a combination of **Magnesium Peroxide and Poplar Charcoal** made up in the form of biscuits.

It will usually be found that when starches are imperfectly digested, *vegetables* are also, and it is advisable—particularly if catarrh is present —either to omit them altogether from the diet for a short time, or give them in the form of purées.

Similarly with *fats*, if they are found in marked quantity in the fæces, they should be temporarily discontinued, or restricted to small quantities of fresh butter or cream.

The above remarks apply chiefly to severe cases. In milder cases all that is often necessary is to restrict, or perhaps add to, one or more articles of diet in accordance with the results derived from the fæcal examination. In all digestive disorders, however, the writer strongly urges the hot water between meals at the times suggested in "Trial Diets"; and, in cases where atony is a marked feature, it is well to try and restrict the fluid-intake entirely to these times, omitting fluid with meals altogether.

In active stages of gout (particularly the irregular form), rheumatoid arthritis, and to a lesser degree in chronic rheumatism, the fæces are, almost invariably, markedly acid in reaction, and show imperfect starch digestion with accompanying abnormal fermentation. Accepting the autotoxæmic origin of these diseases, it is evident that, since the toxins are formed as the result of the abnormal fermentation, a determined attempt should be made to abolish the latter. To accomplish this it is obvious that the offending starch foods must be greatly restricted, the diet for a time consisting chiefly of meat foods, to which fat, in the form of butter or cream, and vegetable purées may often be added with safety.

In very severe cases, however, especially if accompanied by gastric disturbance, the writer strongly urges a preliminary course of *Trial Diet No.* 2, for a few weeks, gradually increasing this in quantity and variety as the abnormal fermentation decreases.

This preliminary diet is often of inestimable value, especially in cases of rheumatoid arthritis, since by removing abnormal fermentation from the intestinal tract it paves the way for obtaining full benefit from the generous diet which should follow. A generous diet is now, and rightly, almost universally advocated in this malady, but, lacking the preliminary measures suggested, is only too often a failure.

REFERENCES.—[1]"Diseases of the Digestive System," *Modern Clinical Medicine*, 1907, p. 611 ; [2]*The Chemical Examination of Gastric and Intestinal Diseases*, 1906, p. 174 ; [3]*The Clinical Morphologies*, 1892, p. 77 ; [4]"Diseases of the Digestive System," *Modern Clinical Medicine*, 1907, p. 653 ; [5]*Ibid.* p. 623 ; [6]*The Chemical Examination of Gastric and Intestinal Diseases*, 1906, p. 141.

TREATMENT BY PASSIVE HYPERÆMIA.

BY

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WITH AN INTRODUCTION

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INTRODUCTION.

THE basis of the treatment by passive hyperæmia is the production of a "*stauungs*"- or "obstruction"-hyperæmia. It is brought about by the application of a light rubber bandage to the limb or part. This obstruction does not produce an absolute passive hyperæmia, the pulse is not affected, and the temperature of the part is not lowered. The veins of the area become dilated, because of the decreased outflow; the blood-pressure and oxidation processes are relatively increased. The opsonic index is said to be raised, and the "pabulum" for the microbe is thought by some to be lowered almost to starvation-point. The continued congestion leads to an improved nutrition of the part, the wandering cells share this advantage with the fixed cells of the tissues, and so the powers of reaction are intensified.

Experimental work supports entirely the clinical observations and the claims put forward for this form of treatment. The induction of "*stauungs*"-hyperæmia in animals is associated with a "lymph-stauung," or an increased amount of lymph in the part. This favours absorption, and appears to hinder the increase of the micro-organisms, as well as to assist the leucocytes in their phagocytic action. The leucocytes appear in larger numbers than under ordinary inflammatory conditions, and undergo autolysis at a more rapid rate than usually occurs; the absorption of the infiltration is thus aided.

The obstruction to the flow of venous blood must not be so great as to make the lymphatic return too marked; otherwise a harmful "white" hyperæmia will be produced. It must only suffice to produce a hyperæmia in which the skin is uniformly red, not spotty. The patient is made the "final appeal" as to the condition. He is not to experience discomfort or pain during the treatment.

During the intervals of application, the circulatory conditions of the part return to normal, and the accumulated products of autolysis, proteolysis, and bacteriolysis pass into the blood-stream. With these there may occur variable quantities of endotoxines liberated by the death of the micro-organisms. The presence of these substances in the systemic circulation may produce some upset in the general metabolism. Small amounts cause little disturbance, but large amounts are associated with malaise and pyrexia.

Locally, the increase in the proteolytic ferments is a favourable feature with regard to bacteria and to small exudations, but when the exudate is a large one, unless it is removed through incisions, the liquefying action of the ferments may produce necrosis of limiting structures, and favour the infiltration of pus into adjacent areas.

The increase in the exudate in areas which have been incised and freely drained, mechanically cleanses the area and hastens resolution ; but if the part has not been opened up, it is productive of harm in promoting the dissemination of toxines and other products through the tissues.

THE several methods employed in the "hyperæmia" treatment all aim at artificially increasing the signs of inflammation, and consequently raising the resistance of the tissues to infection. Formerly, antiphlogistic principles were closely followed ; and a variety of procedures were resorted to in order to allay the heat, redness, swelling, and œdema. Since Bier recognizes in these signs a natural process of reaction, the "hyperæmia" method he adopts is, to some extent, opposed to hitherto approved modes of treatment. His remarkably successful results, however, not only support his views, but mark a distinct advance in modern therapeutics.

THREE METHODS FOR THE PRODUCTION OF HYPERÆMIA.—For the purpose of increasing the symptoms of reactive inflammation Bier makes use of the current of the blood to influence the rate of its flow. By the employment of appliances which retard circulation, such as—

1.—*The Constriction Bandage.*

2.—*The Suction Apparatus*; by which an important increase of blood in the veins and capillary system is obtained.

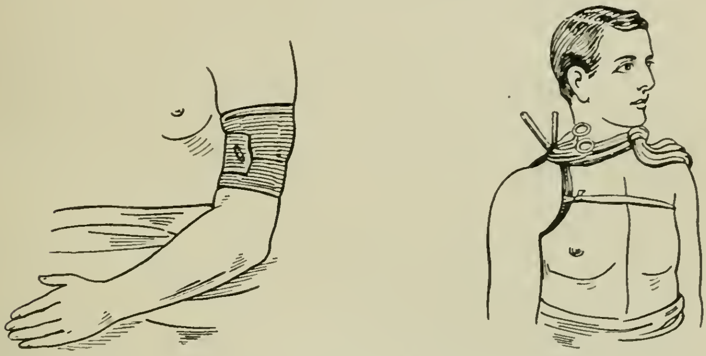
3.—*The employment of Hot Air*, which accelerates the circulation, and by which arterial hyperæmia is produced.

Common to all the methods is the fact that during treatment a more than normal quantity of blood is present in the affected region ; the blood-flow, however, is never suspended. These types of artificial hyperæmia differ essentially one from the other, but in certain diseases, as also in certain stages of those diseases, it has been found advantageous to make variations in the hyperæmia produced.

I.—TREATMENT BY "CONSTRICTION."

TECHNIQUE.—The constriction bandage is a very soft, thin rubber band, 6 cms. (2½ in.) wide. It is a common error to apply the bandage too tightly. The object in view is a slight retardation of the flow of blood through the part. The main arteries being uninfluenced, the pulse in the affected region undergoes no change throughout the whole course of treatment. If the bandage is so tight as to stop the circulation, the processes of nutrition are disturbed, and bad results follow.

The treatment, when properly carried out, is absolutely painless; no painful pressure should be felt from the bandage, and, in spite of the excessive accumulation of blood and œdematous swelling which frequently occur, the part should be free from all discomfort. The constricted area should be kept warm; in colour it is red, or bluish-red, except in the case of severe œdema, when it becomes somewhat paler.



Figs. 10, 11.—Treatment by Constriction.

Familiarity with this method is perhaps necessary to make one realize that the secret of its success depends upon the accuracy with which the instructions are carried out, and, further, that this accuracy is rewarded by the more or less speedy disappearance of pain in the inflamed parts. The beginner should therefore spare no trouble, and, if discomfort arise, should remove the bandage and apply it again more carefully.

Experience shows that in cases of acute inflammation the bandage is better retained almost continuously. The application of the bandage is then accompanied by extreme redness and œdema. This artificial œdema should abate somewhat within the brief interval of from two to four hours daily, during which time only, the bandage is removed, and the part is elevated. Since the resorption of the inflamed œdema causes the virus to pass into the circulation, there frequently occurs during these hours a temporary rise of temperature, although the toxic material may be extensively diluted.

The soft rubber bandage recommended by Bier is to be bound six or eight times round the limb, above the affected part, slowly and smoothly, the end being fastened with a safety-pin or tucked under the last round. The affected parts must never be touched by the bandage; thus, for instance, in a case affecting the *wrist* the bandage is most successfully applied above the elbow-joint.

When the skin of the patient is particularly sensitive, the bandage should not be repeatedly applied in the same place, and in the intervals the skin should be treated with suitable emollients, etc.

During the "hyperæmia" treatment all other bandages must be removed, so that the constriction bandage may be thoroughly efficacious.

Wounds and fistulas should be dressed with sterilized gauze, swathed in a towel, and fastened with safety-pins.

The patient should be made acquainted with the chief points of the treatment; he must remember that pain and discomfort should not occur, and in the case of their appearance he must immediately inform the physician or nurse of the fact.

In cases of inflammation of the *head*, the hyperæmia treatment can be applied in the same way as for the *extremities*. A silk elastic band, about 2 cms. ($\frac{3}{4}$ in.) wide is placed round the neck. By means of hooks and eyes the pressure of the bandage can be easily regulated. As before, an increased accumulation of blood in the region of the head will ensue, but it must cause no discomfort, nor hinder the patient from eating and sleeping. The bandage in this case is applied beneath the larynx.

Artificial hyperæmia of the *testicles* is easily obtained by means of a small, soft rubber tube placed round the base of the scrotum, and fastened with a small clasp. The patient can, in some circumstances, go about while wearing the appliance.

Unfortunately it is impossible to treat the *hip-joint* with artificial hyperæmia, but the *shoulder* presents no difficulties. A broad rubber tube, enfolded in a loose necktie, and placed round the shoulder, serves this purpose. The tie keeps the tube in close proximity to the shoulder-joint, and in order to further ensure its correct position, a tape attached to the rubber ring, before and behind, is tied under the armpit of the opposite side.

Generally speaking, the constriction bandage should be applied by the physician himself, and left only to those of his assistants and nurses who, after careful study, show skill and intelligence in carrying it out and in watching its effect.

In chronic cases, the patients themselves, or their friends, frequently acquire sufficient skill to carry out the treatment, being aided by the fact that the patient himself knows best when the bandage is correctly applied. There can be no question of self-treatment when the disease assumes an acute, febrile form, the responsibility being far too serious.

INDICATIONS FOR "CONSTRICTION" TREATMENT.

Tuberculosis.—The production of artificial hyperæmia leads to good results in articular *Tuberculosis of the Extremities*, with the exception of the hip-joint. In these cases the bandage should be applied, as just described, from two to four hours daily, either twice for one hour, or twice for two hours, in proportion to the acuteness of the disease. In febrile cases the treatment should extend from six to eight hours, as the patient can bear it. In chronic cases where, as frequently happens, it is difficult to obtain a thoroughly warm efficacious hyperæmia, the extremities should be bathed in hot water for ten minutes previous to the application. In tuberculosis, the treatment must often be continued for several months, and the beginner should not be ignorant of this fact, lest he give it up as useless after a few weeks' trial. When consistently carried out, the method is valuable even in very advanced cases. It is *contra-indicated* when there is advanced tuberculosis of another part of the body, and when symptoms of amyloid changes make their appearance. Further, joints already attacked with ankylosis must not be subjected to the treatment; in the case of the knee especially, it would be of no value; such cases require resection.

An essential advantage of Bier's method is that the joints retain their suppleness. Hence, all appliances enforcing rest, such as splints, and plaster-of-Paris dressing, are strictly avoided. As soon as possible without causing pain, the patient may be allowed to make a few slight movements, active and passive, or to make careful use of the limb. All over-exertion, however, and every movement causing pain, must be condemned.

Cold abscesses in the neighbourhood of the joint should be opened by a small incision; after the discharge of pus the scoop should not be employed, nor should any drainage tube or tampon be introduced into the wound. With the concurrent production of artificial hyperæmia, such incisions frequently heal with astonishing rapidity. Instructions will be given later in regard to the treatment of cold abscesses and tuberculous fistulas with the cupping-glass. The above-described treatment leads to the gradual disappearance of all symptoms of the disease.

In tuberculosis it is particularly easy for the patient to treat himself, and the more advantageous in that it must not be discontinued as the convalescent stage is reached, but carried on until a complete cure be effected. Such patients must, however, present themselves for examination by the practitioner every three or four weeks.

The purely hydropic form of articular tuberculosis (*synovitis exudativa tuberculosa*) does not lend itself to "hyperæmic" therapeutics. Tuberculosis, other than articular forms, is also to be treated on the same principle, especially *spina ventosa*.

Acute Articular Conditions.—To acute arthritis, e.g., traumatic, metastatic, and especially gonorrhœal, the treatment is peculiarly well adapted. In every acute inflammation the chief thing is to begin as early as possible, so that fresh infection may be suppressed and destroyed before suppuration or necrosis of the tissues can set in.

The fundamental rules given above for the application of the bandage must be closely followed. During acute inflammation the bandage must be worn for twenty to twenty-two hours daily; hence, there can be a rest of two or four hours only. The rule for the opening of abscesses in acute inflammation is of special importance. The best time for ascertaining the presence of abscesses is at the end of the interval, as there is then least œdema. Retention of pus, etc., must never occur, but, as a rule, puncture or small incisions suffice. Drainage and tamponage are to be avoided. Should an exploratory puncture show the presence of pus in the joint, the collection should be removed with a trocar, and the wound bathed with normal saline. It will be found that the treatment enables the patient in an early stage to make slight movements with the diseased joints, since, under skilful bandaging, pain rapidly disappears. This exercise of the joint is an invaluable preventive of ankylosis, whereas treatment entailing fixation often leads to articular adhesions, which are afterwards beyond remedy. The rapid abatement of pain and early possibility of movement is most striking in cases of gonorrhœal arthritis. If, in severe cases of articular distention, the exudation should repeatedly accumulate, frequent puncturing may be resorted to, the resulting wounds being lightly covered with a loose aseptic dressing that does not interfere with the process of constriction. Careful supervision of the temperature, and examination of the whole body, must never be neglected. The treatment, even in an advanced stage of convalescence, must only be discontinued very gradually. Should any stiffness remain, it can be successfully removed later by the application of hyperæmia with hot air (*vide infra*).

Acute Infection of the Hands, including Extending Suppuration of the Tendon-Sheaths.—These form a special group, for which Bier's treatment is far in advance of former methods.

During the early stages of the infection of the tendon-sheaths, suppuration can sometimes be avoided by applying the constriction bandage for twenty-two hours daily. If, however, no appreciable improvement is shown on the second day, or, as soon as there is reason to suspect the presence of pus in the tendon-sheaths, the focus should be opened into.

The main object of the incision is the prevention of necrosis of the tendons. This may result from two causes. In the first place, the tendons may atrophy from the action of bacterial poison; secondly, too large an incision may permit the tendon to escape from the sheath, where, deprived thereby of all nourishment and surrounded by pus and dressing, it gradually falls a prey to necrosis. Hence, Bier points out that those transverse ligaments that encase the tendons of the finger-joints and wrist in the tendon-sheath should never be cut. The incision should be no larger than is absolutely necessary for the evacuation of the pus; to this end a number of small incisions is generally advisable. The wound should then be washed out with normal saline, or with a very weak antiseptic lotion, all drainage and tamponage being avoided. Shortly after the incisions have been made, a light compress should be applied as a styptic, removed after about three hours, and the constriction bandage then applied, the dressing being replaced by a loose covering of gauze. An abundant secretion from the incision-wound will now take place. As soon as the pain permits, all the fingers should be exercised as much as possible, regardless of the fresh infection. When artificial hyperæmia is brought about, this very quickly becomes possible, and Bier recognizes therein an essential means of preventing the adhesions of tendons to the tendon-sheaths. Should the infection have extended above the wrist, small incisions must be made in the wrist area, great care being taken to avoid the transverse volar ligaments. The constriction bandage should then be applied for twenty or twenty-two hours daily, as long as fever and acute local irritation continue, the daily period being gradually shortened. This treatment, which in the hospital demands most attentive critical supervision, presents very great advantages: a cure is effected in considerably less time; the patient suffers less pain, since there is no drainage or tamponage; and in a far greater number of cases the preservation of the tendons and their functions is ensured. Moreover, when the treatment has been correctly applied from the beginning, the patient is spared that late exercising of the hand and fingers (formerly impossible in an early stage on account of the large scars rendered necessary by the method of treatment), which was not only extremely painful, but did not always lead to satisfactory results.

Osteomyelitis and Erysipelas.—Cases of this kind have been treated, but it is as yet too early to state the results attained.

The method justly lays claim to importance, however, in its character of *Prophylactic Artificial Hyperæmia.* The established fact that the treatment can suppress incipient infection has led to its immediate application to infected wounds, particularly contusions of the fingers and toes, with or without fracture, before symptoms of infection arise. Abundant secretion takes place in the wound, and the whole cleansing process is completed in far less time than is usual under other methods. It is clear that, with the increased nourishment of the part by the additional supply of blood, a greater supply of tissue will be retained than is otherwise possible. It is, of course, difficult to decide afterwards whether the treatment was indispensable in each case.

Injuries to the Tendons.—The immediate application of artificial hyperæmia is of great value in cases of fresh injury where it is uncertain whether the wound has been infected or not at the time of its occurrence. Relying upon the "hyperæmia" treatment, we confidently undertake suture of the tendons, and observe surprising results. Occasionally, an exudate, and even pus, may be seen issuing from the edges of the wound, which should not be too closely drawn together, proving the presence of deeper infection; and yet these cases heal under "constriction," while the tendon suture need not be undone. The advantages of this method are obvious. The constriction bandage must be worn in such cases for twenty-two hours daily till the infection has been completely suppressed.

On the same principle Bier has treated cases of **Compound Fracture,** with marked success. As a rule, in such cases, only unimportant abscess-incisions are necessary.

As further indications for the constriction treatment in the extremities may be mentioned **Tuberculosis of the Tendon-Sheaths** and **Ganglia.** The constriction bandage must be worn twice daily for two hours, but fluid exudations, especially when containing characteristic melon-seed bodies, must be removed by small incisions.

Enforced rest should also be avoided, power of movement being always desired. Needless to say, no work may be attempted with the affected limbs. The same holds good of **Crepitative Inflammation of the Muscles and Tendon-sheaths of the Forearm**, which can be cured by six to eight hours of artificial hyperæmia, or by hot-air treatment.

Acute and Chronic Orchitis and Epididymitis.—Tuberculous affections of these organs should be treated with artificial hyperæmia in the following manner. For acute inflammation the bandage is applied for twenty hours; for chronic inflammation only two to four hours daily. Application of the treatment in *acute* inflammation has up to the present been used less frequently than in *tuberculosis*. It has been observed that even in so chronic a disease as tuberculosis, where a cure necessarily demands much time, the pains disappear comparatively quickly. Here, too, incisions may be made in cold abscesses, which, with the inducement of hyperæmia, heal satisfactorily. In Bier's opinion, castration is only advisable when the tuberculosis is definitely confined to one testicle, and when severe suppuration demands prompt treatment. Double castration Bier considers inadvisable in any case.

Inflammatory Diseases of the Head.—These conditions are to be treated with constriction on the foregoing general fundamental rules; we have, however, treated really satisfactorily only cases of *acute* inflammation. Tuberculosis, lupus, and the like, are not adapted to the method, nor is tuberculous adenia. On the other hand, phlegmonous processes, specially in the neighbourhood of the mouth—glossitis, parotitis, etc.—may be very successfully subjected to hyperæmia. In all cases, incipient accumulations of pus must be opened, and at the same time the constriction bandage applied for twenty hours.

Bier's method is employed very frequently in *Acute Otitis*, as well as in the recurrent attacks of an old *Otitis Media*. Sometimes, early cases are rapidly cured by constriction alone, though, as a rule, paracentesis of the tympanum is necessary for the evacuation of pus. Abscesses occurring in the mastoid process may often be healed with small incisions and without the use of Volkmann's spoon.

In cases of inflammatory diseases in the head, the rule also holds good that the treatment be not discontinued too early, but slowly and gradually. The use of the constriction bandage in cases of inflammation of the ear should always be under the supervision of a competent specialist, so that no complication be overlooked.

II.—TREATMENT BY SUCTION.

TECHNIQUE.—In all circumscribed inflammatory areas, and in cases where it is impossible to apply the constriction bandage, appliances must be employed which produce hyperæmia simultaneously with aspiration of secretions from the wounds. The commonest form of suction apparatus is the simple cupping-glass, which has been widely used as a means of producing hyperæmia. This simple suction apparatus is made of glass, so that that portion of the body which it covers can be under observation, and the instrument itself be easily disinfected by boiling. The glasses vary in size and shape, so that when applied to suppurating fistulas the pus may be collected in one spot.

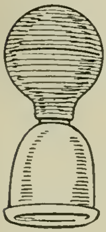


Fig. 12.

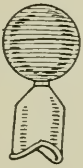


Fig. 13.

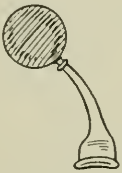


Fig. 14.

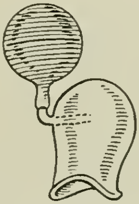


Fig. 15.

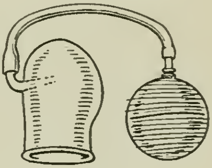


Fig. 16.

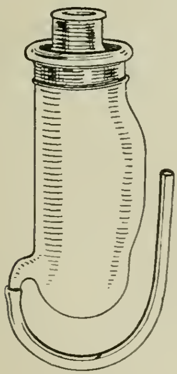


Fig. 17.

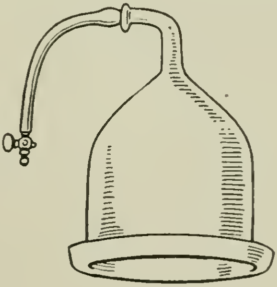


Fig. 18.

Figs. 12 to 18.—Various appliances for Treatment by Suction.

The edges of the glass should be very thick, so as to cause no undue pressure. They are sometimes straight, and sometimes U-shaped, so as to fit comfortably to the skin. The rarefaction of air is effected by means of a rubber ball, either placed directly over the glass itself, or connected therewith by a rubber tube. In applying the larger suction-glasses, the rubber ball is replaced by a suction-syringe, which enables the rarefaction of the air to be more thoroughly effected and, what is more important, to be much better regulated.

The procedure is as follows: the edges of the glass should be well covered with vaselin, to ensure the total exclusion of air; the glass, which should have been carefully selected beforehand, should be so placed over the centre of inflammation (e.g., a fistula) that it nowhere touches the affected parts. No painful pressure should be felt. The slightly-compressed rubber ball is now set free, and the subsequent suction into the glass of the part under treatment is closely observed. The process will be clearly hyperæmic, and an active secretion will ensue from the fistula. The patient should always inform the practitioner whether the application be entirely painless. The degree of rarefaction can be best regulated by the patient's testimony. As far as possible, the same rules should be followed for suction hyperæmia as for the other varieties of "hyperæmia" treatment; it should be applied with moderation, and always without causing pain. The application must not be continued for more than five minutes at a time; after a pause of two or three minutes it may again be applied, and repeated six or seven times, so that altogether the daily treatment lasts three-quarters of an hour. The surrounding parts must be thoroughly covered with ointment to prevent infection of the skin by the secretion from the fistula (e.g., in furunculosis). After the treatment, the skin should be cleansed with benzene, and an ointment dressing applied. To prevent infection the glasses must always be thoroughly boiled after use, the rubber balls being removed previously, as they will not bear frequent boiling; when the glass is skilfully applied the ball need never be rendered septic. With this method of inducing hyperæmia only minute punctures are necessary, even these being frequently superfluous if the treatment is commenced sufficiently early.

In addition to the ordinary *bell*-shaped cupping-glasses, *bottle*-shaped ones are sometimes employed, so that sections of limbs—fingers, hand, arm, or foot—can be subjected to treatment. All air is excluded by means of a rubber cuff, but if this does not fit accurately the part under treatment, a soft rubber band, such as is generally used for constriction, will answer the purpose. Care must be taken, however, that the bandage be not so tightly applied as to produce constriction-hyperæmia. Through a lateral opening connected with a rubber tube, the air must now be rarefied by means of a suction syringe; the area becomes red and hyperæmic, sweat is secreted, and the limb expands into the apparatus. This process can sometimes be performed so forcibly that the fingers at the end of the glass are quite bent. This principle has been successfully applied, together with hyperæmia treatment, for facilitating movement in ankylosis of the finger-joints and wrist.

INDICATIONS FOR SUCTION TREATMENT.

The cupping-glass is of the greatest value in treating **Furuncles** and **Carbuncles.** The application should be made at the earliest stage possible, and the glasses should be scrupulously clean. It is thus possible to entirely suppress an incipient furuncle or suppuration. The air must not be too highly rarefied ; it should cause "red hyperæmia," but nothing further.

As soon as the furuncle has reached a more advanced stage, nothing can prevent the formation of a necrotic focus. But even in these cases, under hyperæmia treatment, no incision is necessary ; the furuncle develops so much more rapidly under the increased congestion of blood, which affords at the same time considerable relief from pain, that all painful measures are unnecessary. The pus and necrotic tissue is removed easily by the suction glass. Sometimes, before applying the glass, the crust over the wound must be removed with forceps. When the furuncle is almost healed the suction treatment must be gradually discontinued. An additional advantage lies in the fact that the painful process of tamponage is omitted ; hence the scar left is hardly visible.

Special attention must be bestowed on the dangerous **Furuncles** occurring on the **Face and Lips** ; the danger can be removed if the case be not too far advanced. In the case of **Diabetic Furuncles,** for which this treatment is admirably adapted, special care must be taken that the glasses fit well, and cause no pressure during application, lest necrosis should result from pressure by the glass. The method has proved of great value also in cases of severe general furunculosis.

On precisely the same principles, the treatment may be applied for **Infected Wounds, Bubo, Suppurating Sweat Glands, Sinuses in the Gums, Suppurations in the Floor of the Mouth, Suppurating Tuberculous Glands**—in short, for all circumscribed inflammatory processes.

Wherever an accumulation of pus is evident, a small puncture should be made, and a suction-glass applied immediately. Where this method can be employed simultaneously with constriction hyperæmia, it is strongly recommended. As a rule, however, the suction appliance should not be employed while the patient is wearing the constriction bandage, but during the intervals.

Treatment of **Puerperal Mastitis** by suction is of great value and practical importance. For the mammary glands specially large glasses are obtainable, and various sizes are necessary. The glass must cover the whole breast, and its application should not only produce hyperæmia and lead to the discharge of pus, but should at the same time absorb the stagnant milk. Here also the treatment should be begun as soon as the earliest symptoms appear, so that suppuration may be prevented. The patient herself, seated comfortably in a chair, holds the glass down firmly, and is able to tell exactly when the correct painless degree of hyperæmia has been reached. The glass is then closed by attaching a clasp to the rubber-tube, and the syringe may then be removed. After five minutes there should be a pause in the treatment.

Every abscess, and even every persistent infiltration, must be opened under chloride of ethyl, and the suction-glass immediately applied.

The short time required for the treatment is a great advantage, as is also its simplicity, all grave operations being thereby avoided, as well as the painful process of tamponage and drainage. The ultimate result is also more satisfactory than when free incisions are made, since the breast is not only spared disfiguration, but fully retains its function as well. In the majority of cases the mother need not even discontinue the feeding of the child; but when the inflammation is very severe, or suppuration takes place near the nipple, this is, of course, impossible.

In view of the importance of the early application of the treatment, its success being then most complete, the practitioner should train the nurse to watch for the first appearance of symptoms; the treatment should never be delayed until large abscesses have formed, which may eventually require a more serious operation.

As examples for the application of the suction apparatus to portions of a limb, **Panaris** and **Paronychia** may be mentioned. At first, hyperæmia, without incision, may be applied for three-quarters of an hour: as a rule, however, a small puncture is required in order to evacuate the pus. The suction-glass should be applied immediately after the incision has been made. In the intervals it is advisable to apply an ointment dressing to prevent the slight opening from closing too soon. The dressing of the wound, like the rest of the treatment, causes no pain; this is particularly welcome when contrasted with the former painful method, necessitating tamponage, in cases of **Whitlow.**

III.—HOT-AIR TREATMENT.

Technique.—The third form of "hyperæmia" treatment, according to Bier, is the *Hot-air Method.* When the surface of the body is overheated, it appears red: artificial hyperæmia is also evidenced by redness of the skin. It may be applied with great success for therapeutic purposes, and especially in those cases where it is desired to bring about resorption of exudations and pathological fluids from the tissues. Moreover, in the *Hot-air Douche* we possess an excellent means of allaying pain in various kinds of neuralgia.

For the application of hot air the so-called "hot-air chamber" is usually employed. In spite of numerous modifications on the part of others, Bier still retains his original model (*Fig.* 19); this is simply a large wooden box, made with a lid, and in the side an iron mouthpiece, through which a funnel conducts the hot air, the latter being produced by means of a gas or spirit flame. The hot air entering the box should not be allowed to stagnate, but made to circulate, so that a continuous current be obtained. To this end an opening in the top of the box is made, large enough to admit a finger, and an additional opening for the introduction of a thermometer. In the sides of the box are openings through which the leg or arm may be introduced, and for its more complete isolation the limb is loosely wrapped in a piece of felt. The hot-air current must not come into direct contact with the surface of the body; it is, therefore, first directed against one side, and thus evenly distributed throughout the box. The apparatus should maintain, as far as possible, an even temperature; the upper strata of air are unavoidably warmer than the lower, and this makes itself disagreeably felt in treating the foot. The heat of the upper air causes pain in the toes, and they should be protected by a small cap of felt. In this apparatus, an extraordinarily high temperature can be borne, even up to 100° and 120° C. (=212° to 248° F.). These high temperatures possess great healing power, but can only be borne when there is good circulation of the air, so that the evaporation of the sweat is not impeded. The temperature may be more satisfactorily regulated by the feelings of the patient than by the thermometer, as the process should always be agreeable and pleasant. It will be observed that such high temperatures have an anæsthetic influence, and care must therefore be taken lest burns should occur unnoticed. When a gas flame is employed, care must be taken that no gas penetrates into the apparatus before lighting, or an explosion may occur.

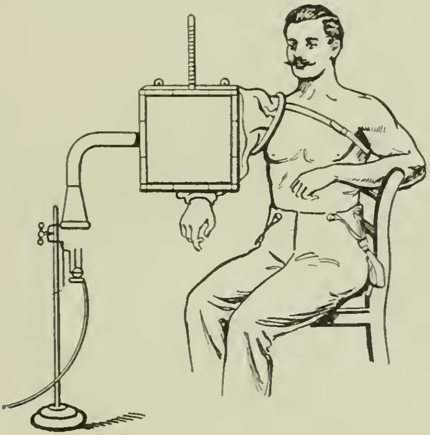


Fig. 19.—Bier's Hot-air Chamber.

The apparatus is saturated with silicate of potassium, and the felt and cotton-wool which help to render it impervious are impregnated with asbestos. The heat should be increased slowly and be carefully regulated, being finally kept for about half an hour at an agreeable temperature. The treatment should last for about three-quarters to one hour at a time.

Care should be taken that the apparatus is not made too small; one will not suffice for all purposes; separate ones must be specially constructed for the different parts of the body. There should be one for the hand, one for the elbow, one for the shoulder, foot, knee, hip, and the whole leg; also for both hips for the treatment of **Sciatica,** for which the apparatus is placed over the patient, who lies face downwards. There is also a chair, into the back of which the hot-air apparatus is fitted, for the treatment of **Lumbago.** A *Hot-air Douche* can very easily be obtained from the same apparatus with the funnel, by fitting thereto an iron pipe, about 3 ft. long, with a movable joint. To this may be fitted several wooden mouthpieces of different sizes, for the treatment of **Sciatica** and **Trigeminal Neuralgia.** The hot-air douche combined with massage is a most successful form of treatment. Besides this simple apparatus heated by gas, an improved electric hot-air douche may be obtained.

Indications for the Hot-air Treatment.

The hot-air method is an excellent remedy for **Rheumatic Pains** of all kinds, for chronic articular inflammation in whatever form—crepitative, rheumatic, traumatic—or arthritis deformans, and for all after-effects of injuries or of articular inflammation. Where it seems advisable the treatment may be combined with massage of the muscular system. The hot air should be applied daily for three-quarters of an hour to one hour. It often affords immediate relief, and increases the power of movement. Patients suffering from a chronic form of such diseases frequently provide themselves with a hot-air apparatus of their own, and use it at every attack.

Bier considers it of first importance that those joints affected with chronic inflammation should not be confined in splints or plaster-of-Paris dressing, but be allowed free movement; this is rendered not only possible, but even agreeable, under the hot-air treatment. In cases where the condition is of long standing (e.g., malum coxæ senile), the pathological anatomic changes in the joint cannot indeed be removed, but the process can be checked and the discomfort diminished. Further, cases of inflammatory flat-foot that have become stiff can, with daily hot-air treatment, recover the power of movement. The apparatus may, with advantage, be employed for the resorption of a **Fresh Effusion of Blood,** of **Hydrops Genu,** and of **Hæmarthrosis.** In these latter cases Bier advocates as much free movement as possible, simultaneously with "hyperæmia" treatment, and the same holds good for fresh **Fractures** in the neighbourhood of joints. For instance, in the typical fracture of the radius, immediately after setting the bone, Bier gives a hot-air bath daily. It is seldom necessary to confine the hand in splints for more than two or three days. It is clear, therefore, that under this method both atrophy of the muscular system and subsequent ankylosis are entirely avoided. This is also true of **Fractura Malleolaris** and **Distorsio Pedis.** In order to stimulate circulation, the hot-air apparatus may be employed for **Varicose Veins,** but great care must be taken, especially when abscesses are present in the leg, as burns would increase the tendency to abscesses. A low temperature should, therefore, be chosen, and the application should not last long. Special caution is necessary in cases of recent thrombosis of the veins, since the increased and accelerated flow of blood loosens the thrombi, and may thereby lead to embolism. In such cases, therefore, hyperæmia treatment is not to be employed.

The various forms of **Gangrene** and **Frost-bite** (chronic and acute) lend themselves admirably to hot-air treatment. It must, however, be borne in mind that a limb in which the circulation is so seriously impaired as is the case in gangrene, is far more liable to suffer from burning than a normal limb is. The temperature, therefore, should not exceed 70° C. (158° F.), and at first should not be applied for more than ten minutes daily. The treatment usually results in an improved circulation in those parts still capable of recovery, and a more rapid demarcation of the necrotic tissue. The hot-air douche, combined with massage, is employed specially for **Sciatica** and **Trigeminal Neuralgia.** The patient takes the mouthpiece of the heating-pipe in his hand, and allows the current to play on the painful parts, at as high a temperature as he can bear, for about a quarter or half an hour. The painful parts may also be massaged. The pain diminishes day by day under the treatment, and many a serious operation can thus be avoided. Hence, Bier makes it a rule never to operate for neuralgia of this kind until trial has been made of the new method. It is only fair to add that this procedure generally proves most efficacious.

RADIOTHERAPEUTICS AND ELECTROTHERAPEUTICS.

BY

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X-RAY DIAGNOSIS.

The diagnostic use of the X rays continues to extend and to be more and more employed and relied upon by both physicians and surgeons. This is no doubt due to a more accurate knowledge of the best methods for their employment, as well as a greater confidence on the part of the profession in the indications given.

The X rays, however, are employed in diagnosis on the Continent to a much larger extent than here. Hertz[1], gives the result of his observations during a year spent in Germany, in which he says that nothing impressed him more than the extensive employment of Röntgen rays in the examination of medical cases, and the better results obtained with their aid than he had been accustomed to see in England. He instances the orthodiagraph, which has been in general use there for some time past, while in England its value is only just beginning to be appreciated.

As this is essentially an instrument of precision, there is no doubt it will be extensively used in the near future. Under ordinary conditions of screen examination, the shadow is larger than the part itself, and is distorted by the diverging rays. In the orthodiagraph only the central ray from the tube is made use of, and an accurate outline giving the exact size and shape of the part is obtained. The general appearance of the instrument is shown in *Fig.* 20.

The arrangement is such that the X-ray tube, a small diaphragm, a small screen with a central mark, and a pencil, are placed with their several centres in a straight line, but yet free to move collectively in any direction. The small diaphragm allows only the central ray from the tube to pass, while a sheet of paper is so placed that the pencil describes the excursions of the screen as it is moved over the patient's body. In the pattern shown the pencil is operated pneumatically by means of a ball and tube, and makes a series of dots, which are joined together afterwards on the sheet of paper.

The room having been darkened, the patient is placed between the diaphragm and the screen, and the central mark on the latter is caused to travel over the outline of any part, such as the heart, and the bulb is squeezed periodically, so as to make a mark on the paper sheet. The general outline of the chest, nipples, sternal notch, etc., are generally marked out before the room is darkened. In this way a permanent and accurate record is obtained which may be kept for reference and comparison, if necessary, with another diagram made at a subsequent date. This instrument was explained and its practical use demonstrated at the British Medical Association meeting at Exeter in July. In connection with this subject a paper by Franze in the *British Medical Journal*, August 10th, 1907, will be found of great value.

In the course of the proceedings in the electrical section, many interesting points in X-ray diagnosis were brought out. Shenton mentioned an important point in the examination of the hip joint. This consists in observing the line, resembling an arch, formed by the top of the obturator foramen and the neck of the femur under normal conditions; in fracture or dislocation this line is greatly disturbed. The use of the tube below the patient is best for this purpose, and indeed this arrangement is likely to become more or less universal in view of the great advantages it gives. Bruce explained his systematic radiography, which is carried out with a very simple form

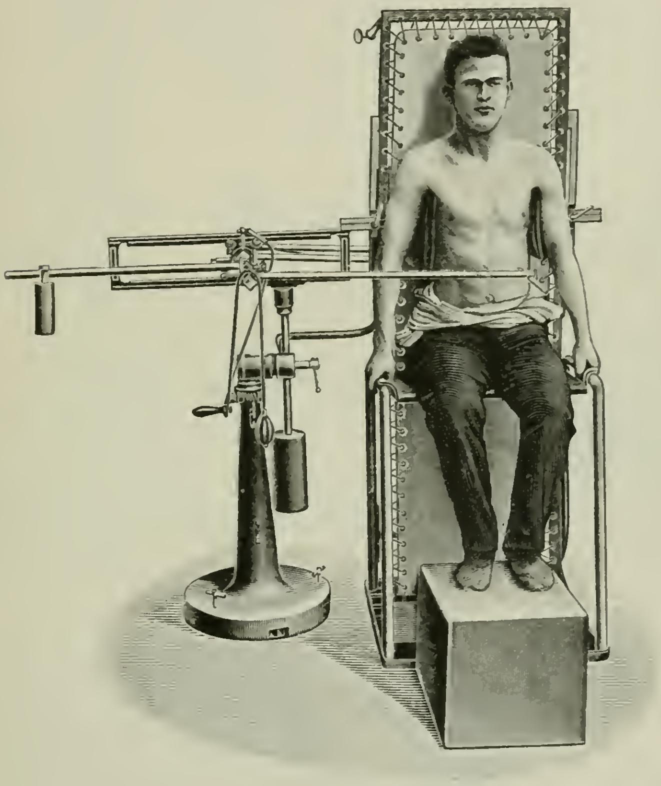

Fig. 20.—The Orthodiagraph.

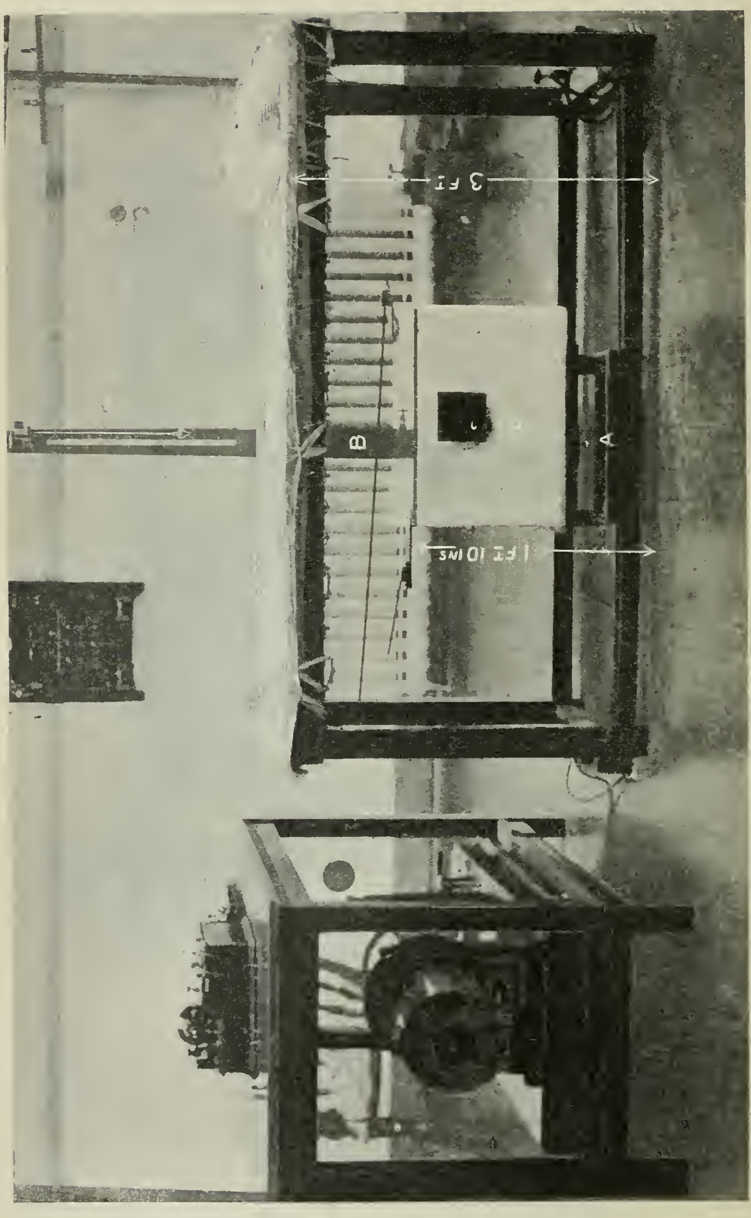

Fig. 21.—Dr. Bruce's Couch for Radiography.

of couch designed by him (*Fig.* 21). His idea is to take every part of the body always with the same arrangement and relative position of the tube, plate, etc. One is thus accustomed to see any portion of the body, taken from exactly the same point of view, so that any departure from the normal is easily and surely recognized. He has prepared an atlas of normal skiagrams, which are well produced and can be referred to in a moment for purposes of comparison ; accompanying each skiagram is an illustration showing the exact position of patient, tube, and plate when it was prepared.

Mackenzie Davidson was very insistent on the superiority of the stereoscopic method, and no doubt it is of great value ; but many of those present seemed to think it had been over-rated, and that the image as seen in the Wheatstone stereoscope was not free from distortion. The stereoscopic method, moreover, is much too expensive, in both time and plates, to employ generally in hospital practice.

At the same meeting Riddell, of Glasgow, described a method of measuring the pelvic brim by means of X rays. He places the patient in a prone position, with the tube underneath and with the anticathode on a line drawn at right angles to the centre of the plane of the brim. The plate is placed on the patient's buttocks so as to rest on the sacrum and tuber ischii. The actual pelvic diameters are arrived at by simple calculation from the measurements of the image on the X-ray plate. From experiments on the cadaver the error was found to be so small as to be almost negligible.

As showing the influence of radiography on our previous ideas as to the state of the parts in common fractures, a paper based on the radiographic examination of 170 cases of Colles's fracture by Morton[2] contains many points of interest. Injury to the styloid process of the ulna was never mentioned in the pre-Röntgen-ray days, whereas an analysis of this series shows that it is partially or completely torn off in more than half the cases. Again, while we used to be taught that the line of fracture was, as often as not, more than one inch from the carpal border, the tables given in this paper show that in the 155 cases where the radius was fractured, in only two was the line of fracture over one inch from the carpal border, while in 111, or nearly 72 per cent, it was only half an inch or less. Other interesting points are given, and the paper will well repay perusal.

The detection of calculi in the urinary system still remains the most difficult, but yet the most interesting branch of radiography. The margin of error by this method is steadily decreasing, and in competent hands the result is now almost a certainty. Every radiographer of experience has his own modifications in technique, and all seem to obtain equally good results. Many consider some form of compressor a *sine qua non*, others prefer to avoid their use, but all agree in the use of some form of diaphragm, to obtain greater sharpness by cutting off extraneous rays. Shenton[3] places a high value on a preliminary screen examination, and claims to be able to make an accurate diagnosis in practically all cases, using a plate subsequently as a record of what the screen has shown. Hall-Edwards [4] and many others do not agree in allotting to the screen examination such a high degree of accuracy, and while no doubt the personal equation accounts for a good deal in screen examinations, it seems to be the general opinion among X-ray workers that the photographic plate is capable of recording more than the trained eye can be sure of. The possibility of phleboliths simulating ureteral calculi should be remembered in view of cases reported by Harris [5] and Beckett [6].

The least satisfactory part of the apparatus used is undoubtedly the X-ray tube. During the last year great improvements have been made in coils, and incidentally we may state that the high-tension transformer has been abandoned almost entirely for radiographic purposes. The intensified coil of Watson & Co. was followed by a heavy discharge type of coil brought out by Newton & Co., and constructed on lines suggested by ourselves. Other makers have followed suit, so that the output of a modern coil under ordinary conditions of working is vastly different from what it was a few years ago. The problem now is to get an X-ray tube that will withstand such heavy currents without serious overheating or sustaining irreparable damage. What is wanted is one the resistance of which is equivalent to a 5-in. spark gap in ordinary air, that will safely carry a current of from 15 to 25 ma. for a period of at least one minute. Such a tube would render radiography of the renal and pelvic regions a very simple matter, and do away at once with the formidable array of cumbersome appliances that have been made for carrying out this class of work. It should be possible to obtain a satisfactory exposure well within the average time a person can hold the breath.

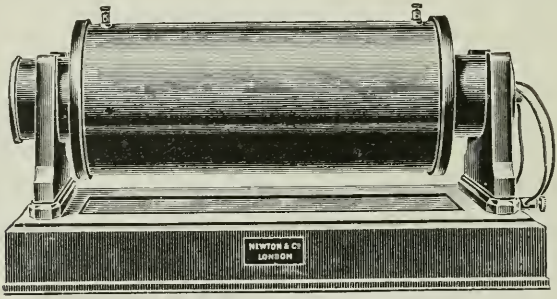

Fig. 22.—Newton's Heavy Discharge Coil.

During the past year the Bauer tube has been introduced, and in many ways it comes nearer to the ideal, possessing the power to pass heavy currents without injury, and a long life under the very trying conditions of continuous hard work. We have had one of these tubes in daily use in the out-patient department of the London Hospital for over three months. Certainly not less than fifteen hundred negatives have been made with it, and probably a great many more than this. It is still doing good work. Beyond a slight darkening of the glass bulb in front of the anticathode, it shows no signs of having been used. The anticathode shows no marking or pitting, and for some reason never gets red-hot under any of the conditions of practical use; this is the more remarkable when we remember that it is air-cooled and not water-cooled. Indeed, we have had a water-coated tube, where the water was actually in contact with the metal of the anticathode, in which the latter was not only marked but actually pitted on the first occasion that a current of 3 ma. was passed through it for thirty seconds. The makers of the Bauer tube claim that it will bear a current of 10 ma. for any reasonable time without damage. Notwithstanding its good qualities and the excellent workmanship shown in its construction, it is a moderate priced tube, somewhere between 70/– and 90/– according to the size of the bulb. The one which has given such an excellent performance at the London Hospital is the largest size—about 20 cms. diameter. Most tubes that have been put on the market within recent years have, at one time or another, been tested under the usual working conditions of that department, and it is only right to say that the Bauer tube has far excelled all others on every point.

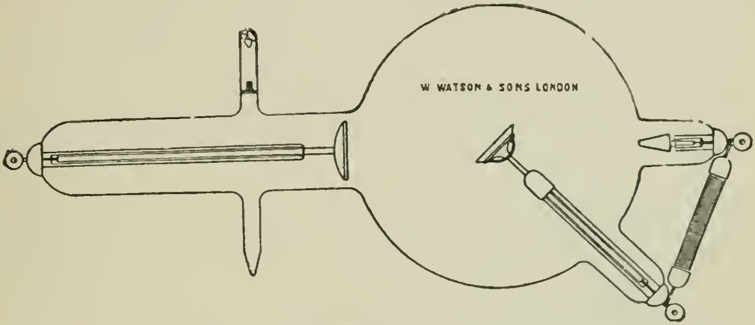

Fig. 23.—The Bauer Tube.

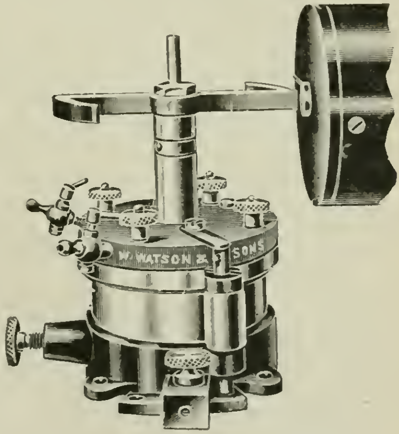

Fig. 24.—Watson's Moto-magnetic Interrupter.

An instrument that constitutes a new departure in one way is worthy of mention, and that is the moto-magnetic interrupter supplied by Watson & Sons. It is a turbine break, but the special features are

(1) That the motive power is supplied by the core of the coil itself, the core being fitted with an extension piece, as shown, if necessary; and (2) That the dielectric, in which the break takes place, instead of being liquid, is *gas*—which may be hydrogen or even coal gas from an ordinary house tap. It is exceedingly efficient as a break, and the mercury remains clean after many weeks of continuous hard work. Possessing, as we know from practical experience, the desirable qualities of efficiency, small size, cleanliness, adjustability as to speed, and low cost, this break is bound to become popular. If gas is not laid on in the house, a small cylinder or even a rubber-bag will provide enough for a long time. It is advisable to run a little gas through before starting up, and if connected to the house supply, it is usual to close the outlet tap only, thus keeping the pressure of the supply in the break itself.

REFERENCES.—[1]*Pract.* April, 1907; [2]*Lancet*, Mar. 16, 1907; [3]*Ibid.* Sept. 15, 1906; [4]*Birm. Med. Jour.* April, 1907; [5]*Brit. Med. Jour.* June 1097; [6]*Ibid.* Oct. 1907.

X-RAY THERAPEUTICS.

During the past year the Röntgen ray as a therapeutic agent has greatly strengthened its position, and is more generally employed than ever before. The great desideratum is a reliable and satisfactory method of dosage, and in looking over the literature of the past year one finds several attempts to solve this problem, with, however, but indifferent success. No method as yet suggested gives an accurate measure of therapeutic action; chemical changes, the effects of ionization, or those produced by the electric current through the tube, are not the same thing, and are after all but rough guides to moderate accuracy. Pirie[1] has described a new method for using X rays which possesses some distinct advantages. His instrument is not unlike an ordinary thermometer with an extra large bulb, in which two platinum wires are sealed, each passing across nearly to the opposite side, so as to lie close to each other but not in contact. The bulb is filled with water, and a drop of water is placed in the tube opposite the divisions engraved on the latter. The two platinum wires are connected in series with the X-ray tube. The flow of current decomposes the water, and the gas matured causes the drop in the tube to rise. The instrument gives a measure of the quantity of current which has passed in a given time, and in his hands has proved fairly reliable as a measure of the output of the X-ray tube. By its aid he has produced epilation, in three minutes and in twenty minutes, by varying the distance of the anode from the skin and trusting simply to this meter.

As regards general medicine, several noteworthy articles have appeared. Comroe[2] has applied X rays with success in some cases of **Organic Neuritis,** and in practically all the relief from pain was apparently of a permanent character. We ourselves have had signal success after six exposures of ten minutes each on alternate days, in a case of **Trigeminal Neuralgia** which up to that time had resisted every other form of treatment, local or internal. It is now six months since the last application, and there has as yet been no return of the pain.

Beaujard and Thermitte[3] have recorded their experience of radiotherapy in **Syringomyelia.** Three cases are reported in which rays of 7 to 9 Benoist and a dose of 3H were applied to the cervical and upper dorsal spine. Good effects were produced in both sensory and motor symptoms.

Tuberculous Adenitis would appear to be very susceptible to X-ray treatment. Barjou[4] finds the rays have a great tendency to promote resolution, matted glands become separated and finally disappear, while if there be softening, the rays hasten this, and the abscess has to be opened sooner. In his experience no bad effects are produced, nor are the chances of dissemination increased. In tuberculous glands of the neck, especially in girls, this method of treatment is very important, inasmuch as it avoids the scar which at times may be very unsightly; but Feldstein[5] thinks softened or caseous glands ought to be referred to the surgeon and not treated by X rays, the cosmetic results in the latter case not being so good.

Edsall and Pemberton[6] report good effects of X rays in three cases of **Pneumonia** in which resolution was delayed. They point out that it is only in cases of a few weeks' duration that any help from this agent is to be expected; for if of greater duration, a certain amount of organization of the exudate has taken place, and this the X rays will not influence. They mention the necessity of commencing with short exposures and small doses, so as to avoid toxic symptoms from the too rapid absorbtion of the exudate.

Rieder[7] has made a very valuable contribution to the study of pneumonia by the aid of X rays. He reports twenty cases, in all of which he watched the progress of the disease by this method. He claims (1) That the area of disease can be detected and a diagnosis made earlier than by any other means; (2) Central pneumonia can be most certainly diagnosed; (3) Inflammation of the lungs always begins centrally and spreads to the periphery; (4) The different stages of the inflammation of the lungs are not distinguishable in spite of the different densities of their shadows; (5) After the crisis, the shadows decrease considerably, but a slight shadow is visible long after nothing more can be detected by physical examination; (6) Complications such as pleurisy can be detected by the limitation of the movement of the diaphragm. Broncho-pneumonia can, according to the size of the affected area, be more or less easily diagnosed. His paper leads to the belief that we are only beginning to realize the great help obtainable from X rays in thoracic disease.

Kienböck[8] has recorded one of the few cases of apparent cure of **Lymphatic Leukæmia** by means of X rays. The enlarged glands, spleen, and long bones were treated for from twenty to twenty-five minutes in ten periods, each lasting from two to four weeks. The man is now as fit for work as before the onset of the disease. A quantitative estimate of the rays was made by means of a specially prepared paper which changed colour according to the amount of rays acting upon it, this being found preferable to a system which shows only different shades of the same colour. Hirschfeld[9] considers that the action of X rays in leukæmia can only be explained on the hypothesis of the prevention of cell-formation, and that a decrease in the excretion of purin bodies is the surest sign of an improvement in the leukæmic condition. G. Joachim[10] gives his experience based on the treatment of thirty-eight cases of the various types of leukæmia. He finds that it is not uniformly favourable, and where the anæmia increases, or there are great changes in the patient's general condition, the use of the rays should be reduced or abandoned. A paper by Galumbinin[11] should also be referred to in this connection.

Williams[12] has published some late results of the X-ray treatment of **Cutaneous Epithelioma.** The cases were treated privately by Dr. Duncan Bulkley, and the results are on the whole very satisfactory.

No.	Age	Site	Last Treatment	Last Report	Result
1	41	Temple ..	Mar. 27, 1903	Sept. 10, 1906	No recurrence after 3 years, 5½ months.
2	78	Front of ear ..	May, 1904 ..	Aug. 19, 1906	No recurrence after 2 years, 3 months.
3	59	Lower eyelid ..	Jan. 28, 1904	Sept., 1905 ..	Died. No recurrence after 1 year, 8 months.
4	76	Cheek	Mar. 20, 1904	Sept. 12, 1906	No recurrence after 2 years, 6 months.
5	61	Cheek	.. .. ..	Aug. 22, 1906	No recurrence after 3 years, 9 months in one spot; fresh outbreak at another point soon after healing at the first.
6	76	Cheek	Oct. 20, 1903	Jan. 10, 1906	Died. No recurrence after 2 years, 3 months.
7	40	Cheek	Jan. 2, 1903 ..	Aug. 29, 1906	Recurrence after 7 months, in corner of scar, now progressing very slowly.
8	81	Nasolabial fold	Oct. 19, 1903	Aug. 21, 1906	No recurrence after 2 years, 10 months.
9	75	Nose	Sept. 16, 1903	Sept. 8, 1906..	Recurrence after 2 years, just below scar; progressing very slowly.
10	64	Skin of upper lip	July 15, 1903	Aug. 17, 1906	No recurrence after 3 years, 1 month.
11	41	Lower lip ..	Aug. 17, 1904	Aug. 29, 1906	No recurrence after 2 years.

Cutaneous epithelioma would seem to be a much more common affection in America than in the United Kingdom, where superficial malignant disease more often takes the form of rodent ulcer. Possibly the climate may have something to do with this.

Hartzell[13] has reported two cases of **Paget's Disease** treated by X rays, with the microscopic appearances described after prolonged treatment, and he gives his opinion that in uncomplicated cases the careful, systematic, and prolonged use of the X rays will bring about a cure, but that if the ducts and gland are involved in the process from the beginning, operation is the one chance of prolonging life.

H. E. Schmidt[14] has discussed the Röntgen-ray treatment of **Psoriasis** and **Eczema** in a very complete manner, and while this belongs more properly to the section of dermatology his conclusions are given here at length, owing to their great importance and the fact that X-ray workers are frequently called upon to treat such cases.

"In estimating the strength of the application required, individual attention is needed rather than a routine method, and in no case should the full 'erythema dose' be given at first, in order to allow for individual susceptibility. For cases of psoriasis the rays should never cause erythema, lest a fresh psoriasis eruption result, and for cases of eczema the erythema dose is usually superfluous. In cases of psoriasis the effect of an application declares itself after a few days, the formation of scales ceases, the infiltration diminishes and finally disappears, so that at the end of about ten days the affected area should be completely recovered, except for the pigmentation, which is especially noticeable in brunettes, and disappears in most cases in from eight to fourteen days. The strength of the application in most cases of psoriasis is not enough to have any effect on normal skin nor to cause a falling out of the hair; but it is better, by way of precaution, not to use the treatment for the head. The method is not to be advised when there are many isolated areas scattered over the whole body. Röntgen-ray treatment is especially indicated in (1) Inveterate single plaques, which often resist all other methods; (2) Psoriasis of the hands; (3) Diffuse infiltration affecting large areas. The technique is simplest for the isolated plaques which can be treated as a whole; more difficult for surfaces in more than one plane, as, for instance, at the bend of the elbow; and most difficult for psoriasis of the hands and the diffuse infiltrations. Special care is needed in cases complicated by diabetes. This was exemplified in a diabetic patient where plaques were present in different parts of the body; here, after quite weak applications, a somewhat severe erythema with peeling of the cuticle declared itself.

"The Röntgen-ray treatment is only applicable for chronic forms of eczema, not for acute cases. The author has never found it do good for eczema of the lower limbs due to circulatory disturbances, and except in obstinate cases it is contra-indicated for eczema of the scalp, because of the danger of the hair falling out. It is especially indicated in (1) Anal and genital eczema with much irritation; (2) Hyperkeratitic rhagadiform dry or moist eczema of the hands; (3) Chronic lichen. The action upon the irritation is especially certain, but it does not show itself until after eight days, and the patient should be warned that the irritation may become temporarily more severe. Clear objective improvement usually becomes obvious after eight days. The result appears to be most permanent in eczema of the hands with marked hyperkeratosis: in other forms relapses are more frequent, but yield readily to renewed treatment. The advantages over other methods are that (1) The treatment is convenient for the patient; thus in eczema of the hands it makes ointments superfluous, and the patient's occupation is uninterrupted; (2) Recovery ensues in a shorter time; (3) It is effective in old, obstinate cases which do not respond to other methods. It has no drawbacks if carried out by some one who has the necessary experience. Of the author's eighty-three cases, forty-five recovered, fourteen were improved, and in only seven did little or no benefit ensue; seventeen left before the completion of the treatment; in twenty-two cases there was relapse."

Pellizzari[15] has employed the rays very successfully in three cases of **Onychia.** They were cured in from six to nine sittings of 4 to 7 units H. He considers it to be the best method of treatment for this disorder; the nail does not fall, but continues to grow, and is eventually quite normal in appearance.

Ballin[16] reports a case of **Rhinoscleroma** treated by the X rays in which the result was very satisfactory, and at the time of writing there was every reason to hope the obstruction would be entirely relieved without surgical intervention.

Four cases of **Disease of the Fauces** treated by X rays and reported by L. Mader[17] are worthy of attention :—

1. Carcinoma of the tongue and soft palate, with severe pain not relieved by large doses of morphia, and slight glandular enlargement. As a result of treatment tongue much lessened in size, ulcer on palate quite healed, and pain much relieved; but the disease spread deep into the lower pharynx, and the patient withdrew from further treatment.

2. Granular pharyngitis with marked neurotic symptoms. Shrinking of "granules" and marked improvement in neurotic symptoms followed on treatment.

3. Case of chronic pharyngitis with great hyperæmia. After numerous exposures no change was noticed, and patient declined further treatment.

4. Carcinoma of the posterior wall of the pharynx, in the form of a flat growth, about the size of a five-shilling piece. Diagnosis established by microscopic examination. When the case was shown after very numerous exposures extending over nine months, the growth had entirely disappeared from the oro-pharynx, leaving a cicatrix, and in the lower pharynx a mere trace of the growth remained. After a few more weeks of treatment "no trace of the growth will remain." The patient looked in perfect health, and had gained eight pounds in weight.

The author gives a detailed description of his pharyngo-laryngeal tube, by means of which he is able to bring the rays to act directly upon any part of the upper air-passages.

The dangers of X-ray treatment, both to the patient and operator, continue to attract an ever-increasing amount of attention. Sequeira, in his paper on X-ray dosage read before the British Medical Association in July last, pointed out the risk of setting up a condition akin to carcinoma through the application of X rays in small doses frequently repeated over a long period of time. He considers it better and safer to employ a small number of massive doses.

De Beurmann[18], in a very complete paper, traces the gradual transition, in chronic radiodermatitis, of normal skin into a papillomatous condition, which in turn gradually takes on all the characteristics —histological and clinical—of cancer, and he propounds the question as to whether the X rays actually cause the cancer or whether it is a case of merely preparing the ground so as to make it susceptible to a cancerous invasion.

Edsall and Pemberton[19] have carefully described and investigated the nature of the general toxic reaction following exposure to the X rays. They have seen three cases in which severe reactions occurred after one exposure, two of which ended fatally, while the third became profoundly ill, but ultimately recovered. This paper should be carefully studied, not only on account of the complete way in which the cases were recorded and investigated, but also because it may point out those cases where any exposure to X rays must be considered a very dangerous proceeding. They believe that a toxic reaction is particularly likely to occur in persons already the subjects of a toxæmia, and also in those whose kidneys and other excretory organs are already severely taxed.

Various protective devices for the operator are described by Krause[20] and Jordan,[21] the latter chiefly concerning himself with the avoidance of sterility.

References.—[1]*Lancet*, July 13, 1907; [2]*N. Y. Med. Jour.* Oct. 13, 1907; [3]*Sem. Méd.* April 24, 1907; [4]*Lyon Méd.* 1906, No. 41; [5]*N. Y. Med. Jour.* Jan. 5, 1907; [6]*Amer. Jour. Med. Sci.* Feb. 1907; [7]*Münch. med. Woch.* Oct. 2, 1906; [8]*Lancet*, June 29, 1907; [9]*Deut. Arch. f. klin. Med.* Bd. 87, Heft 1 and 2; [10]*Zeits. f. klin. Med.* Bd. 60, Heft 1 and 2; [11]*Medizinskoje Obosreniji*, 1906, No. 11; [12]*Med. Rec.* Dec. 8, 1906; [13]*Jour. Cutan. Dis.* July, 1906; [14]*Zeits. f. Phys. u. Diat. Ther.* June, 1906, in *Brit. Med. Jour.* Sept. 15, 1906; [15]*Sem. Méd.* Jan. 23, 1907; [16]*N. Y. Med. Jour.* Mar. 16, 1907; [17]*Arch. f. Laryng.* vol. xviii. part i. 1906, in *Laryngology*, Sept. 1906; [18]*Gaz. d. Hôp.*; [19]*Amer. Jour. Med. Sci.* Mar. 1907; [20]*Münch. med. Woch.* Sept. 4, 1906; [21]*Brit. Med. Jour.* July 6, 1907.

RADIUM.

The therapeutic applications of radium have not occupied very much of the literature on radiotherapeutics during the past year, and so long as the substance is so scarce and so expensive its employment is bound to be very much restricted. From the evidence afforded by the use of the very minute quantities at our disposal, there is every reason to believe that if we could obtain grams instead of milligrams of highly active bromide of radium, its therapeutic applications would at once be very greatly extended, with possibly highly advantageous results to humanity. Its power to satisfactorily deal with small rodent ulcers, carcinomata, and also many of the less malignant growths—when of small size—is a well-established fact, but once the growth has attained the size of, say, a filbert, the use of a few milligrams of radium is not very successful, and in our opinion this is due to the small quantity and not to any lack of power on the part of the radium itself. It is much to be hoped that new and richer deposits of radium-bearing ore may soon be discovered.

A contribution to radium therapeutics by Esdra[1] will well repay perusal.

Fauveau de Courmelles[2] records the value of radium in **Keloid.**

REFERENCE.—[1]*Il Policl.* Feb. 3, 1907; [2]*Rev. de Thérap.* Sept. 15, 1906.

PHOTOTHERAPY.

The literature on this branch of active therapeutics has also been very meagre during the past year as regards any new applications in the treatment of disease. There is no doubt, however, that "light treatment" is being more and more extensively used. The larger hospitals are finding it necessary to augment their equipment, and the smaller institutions are fitting up installations. The use of the mercury vapour lamp is extending, and recently a new quartz lamp of German origin has been put on the market which, for therapeutic purposes, is a great advance on anything hitherto available. Its output is extremely rich in ultra-violet rays, and an exposure of a few seconds only is sufficient to set up an active dermatitis. Particulars can be obtained from most of the dealers who supply apparatus of this kind.

While treatment by *Sun Rays* is of limited interest to people in this country, it is at least instructive to find how much can be done through their agency. Widmer[1] has had great success in chronic **Ulcerations of the Legs**, an exposure of from one to two hours daily producing a cure in about a week. He records several other cases of superficial disease treated in this manner with the happiest results, and his paper will be found of great interest.

Boccelli[2] has contributed a very complete paper, with full bibliography, on the therapeutic applications of *Becquerel rays*. One had almost come to think that one had heard the last of these rays in therapeutics. That they are not without value is shown in this paper.

REFERENCES.—[1]*Münch. med. Woch.* Mar. 26, 1907; [2]*Il Policl.* Anno xiii Fasc. 38, 1906.

ELECTROTHERAPEUTICS continue to make steady progress, and probably in no way can one obtain a better idea of its present position than by reading a paper by Lewis Jones[1], which was read early in the summer before the Glasgow Branch of the British Medical Association. The whole subject is here laid before us as far as it can be in a comparatively short paper.

The *local introduction of chemical substances* through the broken or unbroken skin by means of the continuous current is a method which is coming rapidly into favour. It was our pleasure to hear a very interesting address on this subject by Prof. Leduc, of Nantes, at the Annual Meeting of the British Medical Association at Exeter in July last, and we are convinced that it will very soon assume a position of importance in the minds of the profession as a whole. The general principles of the method can best be gathered from the paper above quoted, and also from another by the same writer[2] on the treatment of rodent ulcer by zinc ions. In those cases where there is no sign of deep induration or affection of bone this method would appear to be the ideal one. "The transportation of the zinc ions into the tissue of the affected part seems to exercise a profound influence upon **Rodent Ulcer,** causing it to assume the appearance of an ordinary simple sore, and in many instances to heal up in about a fortnight after a single application." After an experience of many cases, we are in a position to corroborate the claims here made. From the situation it is sometimes difficult to apply the electrode evenly and thoroughly to every part of the ulcer, and as a consequence certain parts—of the border usually—do not get enough at the first application to ensure their complete disappearance; for such a second application is necessary, which is usually all that is required.

Lupus is a disease which would seem to be admirably suited to treatment by ionic medication, but so far no very definite results have been obtained. The use of aniline has, so far, given the best results.

Further experience with the use of a very slowly varying *sinusoidal current* has fully borne out our convictions formerly expressed in this section. So useful is it that it has almost supplanted every other form of current in the electrical department of the London Hospital for the treatment of cases in which atony or degeneration of muscular tissue forms an important feature. The subject is fully discussed in a paper[3] we published in March last, and further referred to in a paper we read at the last Annual Meeting of the British Medical Association.

High-frequency currents have not been so much written about as in former years, and as a therapeutic method it would seem to be suffering a temporary eclipse. There is no doubt that far too sweeping claims were made on its behalf, and the fact that it was exploited by numerous unprincipled quacks all over the civilized world, have all tended towards this result. The most important paper which has appeared is one by Sloan,[4] which is the result of a large amount of careful work and accurate investigation. The paper is too long to abstract, but it is easily available to those who wish to go deeply into the matter.

The local application of the high-frequency spark is dealt with in a paper by Morton,[5] who has found it of great value in **Alopecia, Acne Vulgaris,** and **"Port-Wine Stains."** Speaking of the latter, he says: "I have no hesitation in saying that port-wine stains or marks, which at times constitute a very serious disfigurement, can be entirely removed by this method when they are of only moderate depth and extent, while the more severe cases can be at least very greatly improved." Redard[6] and Barret have found it of value in the treatment of **Keloid.**

Notwithstanding all that has been written on the subject, it must be admitted that *static electricity* has never gained a very strong foothold in this country as a therapeutic agent, and yet there is no doubt it is capable of doing much good in proper hands. There is also little doubt that with a certain type of patient the good effects produced are purely psychological. This does not of course in any way detract from its value—it matters little whether it is the electricity or the power of suggestion, so long as the desired result is attained. The great obstacles to the more general employment of static electricity would appear to be one of climate—the humidity of the British Isles militating against the efficiency of the apparatus,—and also because there is as yet no satisfactory explanation forthcoming as to how this form of electricity produces its effects.

One of the most marked effects of a course of static electricity is its power as a **General Tonic,** and King[7] has shown how it may prove invaluable in promoting convalescence, and also in the treatment of the various forms of neuritis, such as lumbago, sciatica, etc. Webb[8] also gives evidence of the value of the method under similar conditions.

References.—[1]*Glasg. Med. Jour.* Aug. 1907 ; [2]*Brit. Med. Jour.* Feb. 16, 1907 ; [3]*Arch. Röntgen Ray,* Mar. 1907 ; [4]*Lancet,* June 8, 1907 ; [5]*Lancet,* June 1, 1907 ; [6]*Presse Méd.* July 11, 1906, in *Rev. de Thérap.* Sept. 15, 1906 ; [7]*Bris. Med.-Chir. Jour.* Sept. 1906 ; [8]*Lancet,* Jan. 12, 1907.

ELECTRIC NARCOSIS.

This subject, though left to the last, seems very likely in the near future to influence medicine and surgery to an extent little suspected by the profession as a whole.

Leduc[1] has described a condition which he terms electric narcosis—a state he brings about by the application of electric currents to the brain, and during which the subject is without voluntary movement, makes no reply to stimulation, and exhibits only some reflex movements (the beating of the heart and respiration). This state can be maintained for several consecutive hours, and ceases immediately with the stoppage of the current.

The current employed is an intermittent one, of low tension and unidirectional. The impulses follow one another at the rate of one hundred per second, and the duration of each impulse is one-tenth of this—or one-thousandth of a second. This form of current is produced by a specially designed commutator ; and the relation of length of impulse to duration of interval is what has been found to be best for the purpose after a prolonged and extensive series of experiments. Leduc has also found that the results obtained when the source of electricity is from accumulators are much better than when the street mains are used.

The current is applied to the head by means of electrodes placed antero-posteriorly, suitably padded and adapted to the surface contour. The interrupter is started, and then the current is turned on, at first quickly, then more slowly. As in chloroform or ether narcosis, there is at first excitement ; but by raising the current very slowly this is followed, without a movement or sign of pain, by a state of cerebral inhibition analogous to chemical narcosis. The animal reacts to no stimulus, any operation can be done on it, and the limbs, if moved, seem to be under no influence except that of gravity.

When the current is cut off, the awakening is instantaneous: usually the animal gets on its feet, looks quietly about, and shows no sign of fright, suffering, or fatigue. There are no after-effects, no vomiting, rarely a little stupor, and no resentment or aversion to the experimenters.

It is not necessary to describe the experiments in any further detail here—enough has been said to point out their extreme importance, and to indicate the vast possibilities that may be in store for electric narcosis. So far, the method has been applied only once to the human subject, and that was Professor Leduc himself, in the presence of Malherbe and Rouxeau, of the School of Medicine of Nantes. He describes his sensations very minutely, and his only regret was that they did not carry the narcosis to a degree of complete anæsthesia. This paper should be carefully read by every medical man, whether he be specially interested in medical electricity or not.

Reference.—[1]*Presse Méd.* Feb. 27, 1907, in *Med. Electrol. and Radiol.* Aug. 1907.

Part II.—The Dictionary of Treatment.

A REVIEW OF MEDICAL AND SURGICAL PROGRESS

FOR 1907. BY MANY CONTRIBUTORS.

Together with a brief Synopsis of Treatment recommended during recent years.

GENERAL REVIEW.

ACUTE INFECTIVE DISEASES.—Cerebrospinal fever has not become generally more prevalent in the United Kingdom, as was feared. In London it has been made a notifiable disease for a stated period. On the advice of the Royal College of Physicians of London, the London County Council has ordered that for the purposes of notification cases of posterior basic meningitis are to be reckoned as cerebrospinal fever. It is acknowledged by most authorities that these two diseases are caused by the same micro-organism.

Of recent years improved methods have rendered the bacteriological examination of the blood in typhoid fever more easy and trustworthy. Some account of the methods (by which an earlier diagnosis of the disease can be made) and the results will be found in the section devoted to typhoid fever.

Prof. Chantemesse's treatment of typhoid fever appears to be very successful, though it has not yet been carried out, with two or three exceptions, elsewhere than in his own clinique in Paris. A short abstract is given of this treatment and its results, taken from a pamphlet written by the professor.—[E. W. G.]

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DISEASES OF CHILDREN.—Much attention has been attracted recently by the success of acidified milk; that is, milk in which a lactic-acid fermentation has been produced by the addition of more or less pure cultures of lactic-acid-producing bacilli. It has long been known that lactic-acid-producing micro-organisms have some power of inhibiting the growth of certain pathogenic and putrefactive bacteria, and it may be by this action that their presence in the intestine prevents some of the bacterial processes in the intestine which are associated with infantile diarrhœa. However this may be, observations have been published recently showing that such acidified milk is sometimes distinctly of value in infantile diarrhœa. Cyllin is one of the most recent remedies for this complaint.

In the chronic vomiting of infants, in which the mode of feeding is the most important point in treatment, the use of white-wine whey has been advocated.

Some interesting observations on the hæmorrhages of the new-born have been brought forward, and the value of gelatin administered orally is emphasized, instead of the subcutaneous injections, which have been shown to be fraught with danger.

Convulsions in infancy have again been under discussion, both as to etiology and results, and some striking instances in which the mere taking of food by infants produced convulsions have been reported.

In the treatment of chorea the value of arrhenal, or methylarsenate of sodium, has been asserted, but it is noticeable that in spite of the many remedies which have been tried in this disease, there seems to be a consensus of opinion that arsenic is most generally useful.—[G. F. S.]

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NEUROLOGY.—The chief advances have been in the direction of refinement of diagnosis. This applies not only to organic affections, but also to the neuroses. We would call particular attention to the differentiation between neurasthenia and psychasthenia, a distinction which is of the utmost importance, both from the point of view of prognosis and of treatment. Psychasthenia is a primary disease, the culmination of an inherited neuropathic taint, whereas neurasthenia only occurs secondarily to some other cause. Any patient may become neurasthenic if exposed to sufficient bodily or mental stress, but the psychasthenic is born, not made.—[P. S.]

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DERMATOLOGY.—The International Congress of Dermatology, held in New York in September, 1907, has been one of the principal events in this section. The most interesting contribution to new treatment made at this Congress was the demonstration of the effects of the local application of liquid air in nævi, rodent ulcer, and lupus erythematosus. The air is obtainable in Dewar's bulbs, and application is made by means of a piece of wood, round one end of which cotton wool is wrapped, and the swab so formed is dipped into the liquid air, and kept in apposition with the diseased surface for a few seconds, until the part becomes frozen. A single application is often sufficient in the case of nævi; in the case of rodent ulcer and lupus erythematosus two or three may be necessary, spaced over a fortnight. The treatment is painless; no dressings are required, and the results are said to be excellent and permanent. Probably the treatment may be extended with advantage to other chronic diseases of the skin, but it is said not to be useful in lupus vulgaris.

The uses of radium have been widened, and there is reason to hope that subcutaneous injections of radio-active solutions may be a valuable means of effecting tissue change in several diseases. The methods for local application of radium to the surface of the body have been much improved by the manufacture of a radium-containing varnish which, spread over a flat surface, forms a more potently radio-active instrument than the mere aggregation of grains of the salts formerly used. With these newer apparatus very successful results have been obtained in the destruction of vascular nævi, even when erectile and of large size.

The use of electrolysis of metallic-salt solutions in promoting the absorption by the skin of the metal set free, and thus producing tissue reparation, has been attended with excellent results in the hands of Lewis Jones and others. The method has been tried for rodent ulcer, warts, and ringworm.—[E. G. L.]

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Tropical Medicine.—During the year 1907 there has been no especially striking discovery in the sphere of tropical medicine. The micrococcus described as the cause of beri-beri in last year's report has, like so many others, not been confirmed.

Among the most important results obtained as the direct outcome of special investigations have been those in connection with Malta fever. The effect on the incidence of the fever among the garrison in Malta has been most marked. In the Royal Naval Hospital, where at one time a third of the cases which occurred in the navy could be traced to residence in this hospital, after goats' milk was forbidden not a single case could be traced to this source. Similar results were obtained among the soldiers of the garrison, and it is hoped that soon the disease will disappear entirely from the forces, and some seventy or eighty thousand days of severe illness be wiped off the yearly sickness list of the navy and army.

With regard to sleeping sickness, experimental work continues to be conducted actively. Perhaps the most important advance in treatment has been the use of mercury following atoxyl. This treatment is based partly on the newly-discovered fact that the trypanosomes have a latent phase in the blood hitherto overlooked, and it is possible that the mercury has its good effect in acting upon this latent form. Atoxyl has been largely employed by Koch in his expedition to German East Africa, and the results given by him of its use are extremely good. Although not perhaps absolutely specific, it is very nearly so. He uses on two consecutive days doses of 0·5 gram of atoxyl at intervals of ten days. The treatment must be prolonged, and it is noteworthy that when the doses are kept at this amount no symptoms of blindness were noted. Many problems of sleeping sickness have still to be solved, such as the question as to whether the fly transmits the disease mechanically, or whether there is a cycle of development of the trypanosome in the fly. A very interesting discovery in regard to sleeping sickness has been made by Koch, viz., that in certain cases the disease appears to be transmitted by sexual intercourse.

But little progress has been made in the use of sera in the treatment of bacterial dysentery, though it is a matter of vital importance to many in the tropics, and several antitoxic dysentery sera are now available.—[J. W. W. S.]

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Obstetrics and Gynæcology.—The subject of uterine myomata has again received much attention. Noteworthy is the paper of Noble, based on nearly five thousand published cases. The conclusions strongly support operative interference as soon as the tumour begins to give rise to symptoms.

The insufficiency of the treatment of carcinoma of the uterus has in the past been a reproach to gynæcologists. Vigorous attempts to improve upon this state of affairs are being made. These are in two directions. Firstly, concerted measures are being planned or actually carried out to educate the public in the importance of the early recognition of this disease. Secondly, the more radical operative measures introduced by Wertheim are being taken up by surgeons in this and other countries. The results are not yet ripe for judgment; but Wertheim, whose large experience is already available, reports a much reduced operative mortality and a most encouraging percentage of "cures."

Additional pathological and clinical knowledge of the condition known as "fibroid metritis" has been forthcoming.

The various methods of dilating the cervix of the pregnant uterus have been made the subject of discussion. The use of Bossi's dilator is not so warmly advocated as on its first introduction. On the other hand, vaginal hysterotomy ("vaginal Cæsarean section") has been favourably reported on. Both these violent means of evacuating the uterus are, in this country at least, held to be measures suitable for cases of extremity only.

The operations of hebosteotomy ("pubiotomy") and symphyseotomy are being warmly advocated abroad for cases of contracted pelvis of moderate degree. Home-made evidence as to the value of these operations is not yet forthcoming in sufficient bulk to warrant a final judgment.

Interesting researches into the value of accurate uranalysis as a guide to diagnosis, prognosis, and treatment of the "toxæmic" diseases of pregnancy continue to be made. This work, which we owe to American obstetricians, is very valuable, and well repays a study.

Two very valuable English papers on the treatment of puerperal septic infection of the uterus and peritoneum have appeared. They mark a real advance in this subject.

Two admirable papers on the inflammatory affections of the pelvis and on the symptoms and treatment of tubal gestation may be accepted as guides to the most approved methods of treating these important conditions.

A paper dealing with the value of the ovaries from the surgical standpoint repays the reading.

The subject of ovarian prolapse has been considered, its symptomatology and pathology studied, and a new operation for its relief described.—[A. E. G. and V. B.]

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Syphilis and Gonorrhœa.—The disastrous results in married life of old-standing gonorrhœal infection in the male has formed the subject of many fervid utterances, and it is possible that the picture of infection of the female and resulting sterility may have been somewhat overdrawn. Erb has raised a considerable outcry in Germany, by publishing statistics on these points which tend to show that the actual figures fall short of the somewhat loose statements made by various authorities. He does not deny the misery that such accidents entail.

Incision of the epididymis and evacuation of any pus that may be found is recommended by some writers in severe cases of gonorrhœal epididymitis.

The treatment of gonorrhœal arthritis by vaccines is the subject of an interesting article by Cole and Meakins. Some encouraging results were obtained.

Further work by German and French observers tends to strengthen the position of the *Spirochæta pallida* as the etiological factor of syphilis. Experiments trend towards the production of artificial immunity to syphilis and the discovery of a vaccine which will produce this.

The intramuscular administration of mercury in syphilis is gradually gaining ground in this country, and the importance of the use of adjuvants to intensify the action of mercury is becoming more widely recognized.—[J. W. T. W.]

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Ophthalmology.—The growing importance of general pathology in the elucidation of ophthalmological problems has been pointed out in previous years in this place. The attention which has recently been paid to the bacteriology of the conjunctival sac is one instance of this. The employment of tuberculin and the bearing of the opsonic index on certain diseases of the eye is another (cf. article on The Eye in Relation to General Disease). The therapeutical employment of serum in eye diseases is in this country confined to the occasional use of antitoxin for diphtheria of the conjunctiva, but Römer in Germany employs antipneumococcic serum in hypopyon ulcer of the cornea, and Darier in France is beginning to employ antitoxin for other diseases besides diphtheria. These instances may not have much permanent significance, but they show the direction in which the thoughts of the advanced guard of ophthalmologists are turning. While thus obtaining all the benefit it can from general pathology, it seems as though ophthalmology may be destined one day to repay her debt to science by throwing light on the problem of heredity. In Switzerland. Steiger has begun to take careful measurements of the corneal curvature in thousands of school children, each of them having one or more brothers or sisters whose corneal curvature is also measured. In England, Nettleship has for some years been engaged in compiling careful records of family histories in such hereditary conditions as albinism, the hereditary form of cataract, and retinitis pigmentosa. Ophthalmology affords a peculiarly favourable field for compiling such records, and there is an almost unlimited scope for such work.—[A. H. T.]

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General Surgery.—In the department of general surgery the year has not brought forth much of striking interest. There have been several papers on the surgery of the blood-vessels, and one in the Johns Hopkins Hospital Reports on experimental surgery of blood-vessels. The application of some of these experiments to the surgery of human beings is very problematical ; from the published cases the results of arteriovenous anastomosis have been disappointing, and in elderly people are likely to be so. There is much to be learnt, however, as regards technique from some of the reports.

The published results of the surgical treatment of sarcomata of bones are apparently as hopeless as ever, and no one seems to have had as good results from the injection of Coley's fluid as have been obtained by Coley himself.

Several papers by American surgeons have been published on the final results of operations for breast cancer ; these are better than were formerly the case, and there is no doubt that the operation as practised at the present day gives greater freedom from local and regional recurrence, and in some cases a higher percentage of cures, or at least of many years' freedom from internal metastasis. Too much attention cannot be drawn to the tendency of so-called chronic mastitis or involution changes in the breast to become carcinomatous.

There have been several papers on the operative treatment of fractures during the past year, and at a discussion at the London Harveian Society the preponderance of opinion was in favour of early operation in many cases where exact adjustment of the fractured ends could not be obtained.

The necessity in these cases of a very rigid asepsis must not be forgotten ; and even when operative measures are undertaken, the obtaining of exact reposition of the fractured ends may be very difficult, and the maintenance of the same may tax all a surgeon's ingenuity. In view of these facts, the general practitioner, unless he has had more than an average hospital experience, will be well advised to pause before resorting to operative treatment in the majority of such cases.

Anæsthesia and the X rays are two very valuable aids, especially in fractures in the neighbourhood of joints.

In spinal fractures and dislocations operative treatment has not fulfilled the expectations which at one time were entertained.—[P. L.]

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Abdominal Surgery.—Perhaps the greatest surgical advance during the year is that registered by the more hopeful view which can now be taken of the prognosis in peritonitis. Two years ago any surgeon asked as to the mortality of general septic peritonitis would have replied that it was something between 80 and 100 per cent; at the present time, owing chiefly to earlier recognition by the general practitioner of conditions likely to lead to peritonitis, and also to improvements in surgical methods, the answer would be that it is no more than 10 per cent. Bacteriology has not up to the present fulfilled the anticipations of its supporters. The problems to be solved by bacteriologists are not so easy as to allow of rapid progress. Fortunately the form of organism associated with the infection does not appear to represent a question of serious surgical consequence, since operation has been found to be equally useful in peritonitis, whatever the variety of organism that has caused it.

The chief improvement in the treatment of gall-stones depends upon correct diagnosis and immediate removal of the stones before they have left, or hopelessly damaged, the gall-bladder. When they have arrived at the common duct and jaundice is present, all the dangers of operation, sepsis, hæmorrhage, and shock, are so multiplied, that what might have been a safe undertaking has been converted into a very serious one. So soon as it becomes generally recognized that the only cure is by operation, and that operation is safe when the stones have not passed out of the gall-bladder, the prognosis for these cases will become entirely hopeful.

Diseases of the colon have bulked largely in medical literature during the past year, and "mucous colitis" has almost ousted appendicitis and become quite a fashionable complaint.

It is now recognized that every "tumour" of the colon is not malignant, and that here, as elsewhere in the body, tuberculous lesions may very closely simulate those due to malignant disease. It is also now known that every abscess in the right iliac fossa and in connection with the bowel is not the result of appendicitis, but may be due to ulceration in the cæcum or colon, and that an abscess may occur on the left side from ulceration of the sigmoid flexure exactly simulating that due to appendicitis in the case of transposition of the viscera. It seems probable that all chronic inflammatory "tumours" of the bowel are due to tubercle, that many tubular thickenings and stricture are due to chronic sepsis and the presence of sacculi, and that the symptoms of "colitis" may be the result of cancer, tubercle, syphilis, polypi, ulceration and inflammation of the colon, or of some unknown pathological conditions of the bowel or nervous system, or both. When a definite diagnosis can be made by any of the means now well-known, a suitable treatment can usually be instituted, and this is surgical.

The treatment of "mucous colitis" is not surgical, for the name implies a failure to arrive at a diagnosis of any known pathological condition, and unless it is clear that medical treatment has failed and that the condition is a serious one, operation is more likely to do harm than good. If an operation be decided upon, it should in the first instance be exploratory, and any definite pathology should be suitably dealt with; if, on the other hand, no definite pathological lesion is discoverable, the abdomen should be closed without inflicting further damage.—[R. M.]

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RECTAL SURGERY.—Although the past year has not produced as voluminous a literature as many previous ones on the subject of cancer, some papers of importance have been published. Harrison Cripps has produced a third edition of his well-known work, in which the chapter on rectal cancer has been rewritten, and he has added a table of 380 consecutive cases of cancer from his private practice.

The vexed question as to the best route to select for excision of the average case of cancer appears still to be unsettled.

The older methods of attempting the cure of complete prolapse of the rectum, by cauterization and narrowing of the anal outlet, have of recent years given place to others, by which more satisfactory results have been obtained. The large variety of operations may be taken as indicating the difficulties encountered in the surgical treatment of this disease. This is not to be wondered at, when we consider that relaxation of the muscles and ligaments of the pelvic outlet is an undoubted factor in the production of prolapse, and that their complete restoration by surgical operation is an impossibility; but there can be no doubt that in a large proportion of cases fixation of the pelvic colon by colopexy gives admirable practical results. An excellent review of this subject is published by Lenormant. The etiology is fully discussed, including the recent view of Zuckerkandl and others, that the initial factor in the production of prolapse is the pressure of a loop of small intestine in an abnormally deep pouch of Douglas. The various methods of colopexy, either alone or in combination with other procedures, are ably reviewed, and a strong plea is made for fixing the colon posteriorly to a surface denuded of peritoneum.

After some years of quietude the question of the treatment of piles by injection is again raised. Roux treats internal piles with 60 per cent solution of carbolic acid in glycerin, while Franck uses for the same purpose 50 per cent alcoholic solution of carbolic acid, and limits the area of action by temporary ligature with a wire in a polypus snare. On the other hand, Kelsey, of New York, denounces with characteristic energy the use of injection, and gives examples of the serious results which he has known to follow this plan of treatment. Barker, in a clinical lecture on the treatment of internal piles, is strongly opposed to operation on piles while inflamed, and urges the use of mercuric bichloride solution 1–1000 until inflammation has subsided; in extensive cases he advocates Whitehead's operation. The present writer in a clinical lecture describes an operation, combining excision, crushing, and ligature, which he has employed almost exclusively for the past seven years.—[C. B.]

* * * * *

Urinary Surgery.—Three suggestive lines of advance in operative procedure are noticeable in this year's literature; although each is still in the experimental stage, yet each is well worthy of the careful consideration of the surgeon and the profession at large.

The first deals with the conservation of kidney life by negotiating an irreparably damaged ureter. It is suggested by Sharpe, of St. Louis, Mo., that when a ureter is torn and cannot be repaired, its stump should be carried across the middle line and grafted into its fellow, making one lower ureter drain both kidneys.

The second concerns itself with alleviating the agony and misery of a bladder which cannot be freed from a contained growth, whether such be an exuberant benign or an inoperative malignant tumour. The distress of inoperative bladder growth is accentuated by the constant presence of urine in the viscus. To keep the organ dry and thus to obviate the suffering attending the reservoir action, F. S. Watson, of Boston, U.S.A., has in the last three years planned and carried out an operation which he terms bilateral nephrostomy. He has successfully drained the entire secretion of both the kidneys, by tubes which enter the pelvis of each kidney, arranging a special loin urinal for carrying off the urine. He further suggests that when the patient has recovered from this operation, the diseased bladder should be removed. A modification of Watson's plan consists in bringing out both ureters on to the loin, rather than by placing a tube in the kidneys, and the performance of cystectomy a month later.

The third suggestion is in the form of a nephropexy devised by Stanmore Bishop, of Manchester. Its technique consists mainly in fixing the mobile kidney in a good position under control of the eye from in front, the wound being anterior instead of lateral.—[E. H. F.]

ABDOMEN, GUNSHOT WOUNDS OF.

Rutherford Morison, F.R.C.S.

George Tully Vaughan[1] further reports on three of these cases. In the first, ten holes were found in the small intestine, all being in a portion of bowel about two feet long. Two inches of this gut was so badly lacerated that it was resected and an end-to-end anastomosis made. Six holes were closed by silk sutures. One opening in the bladder was successfully sutured; another was so deep in the pelvis as to be inaccessible. To prevent extravasation of urine a soft catheter was tied into the bladder; after being changed twice weekly for three weeks it was dispensed with. Recovery was complete.

In the next case there were nine openings in the small gut, distributed through the last seven feet of the ileum, and two holes in the bladder. The patient was operated upon twelve hours after injury, by which time general septic peritonitis was well advanced. All the holes were sutured with silk. Death occurred twenty-six hours later.

In the third case, the bullet entered the epigastrium. Holes were found in the left lobe of the liver, and in the anterior and posterior surfaces of the stomach. These were sutured, as was a hole in the pancreas. The left kidney was also wounded, as evidenced by hæmaturia ; the hole was not located. Six weeks after the operation the patient was troubled with sweatings, emaciation, and a swinging temperature. A fortnight later a staphylococcic abscess, situated at the lower border of the pancreas, was opened. Recovery was now uninterrupted.

REFERENCE.—[1]*Amer. Jour. Med. Sci.* Aug. 5, 1907.

ACCESSORY SINUSES OF THE NOSE. (*See* NASAL ACCESSORY SINUSES.)

ACHYLIA GASTRICA. (*See* STOMACH, DISEASES OF.)

ACNE VULGARIS.

The following are some of the many **Sulphur** preparations recommended for local application: (*Vol.* 1900, *p.* 130)—Milk of Sulphur, Alcohol, Water, equal parts; add to this a tenth part of Gum Mucilage, and apply night and morning. (*Vol.* 1900, *p.* 66).—Precipitated Sulphur, Boric Acid Powder, Powdered Starch, equal parts: to be used as a dusting powder after the pustules have been emptied of pus and fomented. (*Vol.* 1903, *p.* 106)—Sulphur, 4 parts; Salicylic Acid, 3 parts; Sweet Oil of Almonds 5 parts ; a paste for application to acne of the body.

ACTINOMYCOSIS.

(*Vol.* 1906, *p.* 94)—Ochsner recommends **Excision** or **Curetting** of the mass, followed by very large doses of **Potassium Iodide** (gr. xc daily). This is given for 4–7 days, and repeated for the same period after an interval of a week ; then it is to be repeated at intervals of a month.

ADDISON'S DISEASE.

Robt. Hutchison, M.D.

DIAGNOSIS.—The chief signs and symptoms of Addison's disease are pigmentation, asthenia, vomiting, and attacks of faintness. Pigmentation, as Otto Grünbaum says,[1] is the most obvious sign of the disease, although far from the most pathognomonic, for there are cases which do not develop pigment, whilst development of pigment may occur in many other conditions. The pigmentation in Addison's disease is usually an increase in depth of tint of those parts of the body which are normally dark, along with patches of pigment upon mucous surfaces.

The parts subjected to light or irritation, such as the face and hands, and the axillæ and groins, are often the first to show definite darkening. Where the shoulder straps or braces cross the shoulders, or the garter encircles the leg, pigmented bands may be seen which, if they do not yield to repeated applications of soap and water, are suggestive of the disease. It must be borne in mind that these are often present in brunettes, but rapidly disappear when the patient is confined to bed, and the source of irritation removed. The scalp and nails usually escape, although the latter may be affected in advanced cases which have run a chronic course. Often brown spots may be seen distributed irregularly over the limbs and trunk. Scars are usually pigmented, but may escape with only a dark halo.

Pigmentation of the mucous membranes was at one time considered of exceptional value in diagnosis, but it may certainly occur in other conditions. The pigmentation associated with pregnancy is usually of but recent date, but may of course be accompanied by vomiting and a languor which makes definite exclusion of Addison's disease (by the usual methods) far from easy. The increase of pigment occurring in advanced chronic tuberculosis may be due, in a certain number of cases, to the adrenal glands becoming affected, and in those it may be impossible to distinguish it from the ordinary typical disease, but in the majority, without suprarenal destruction, the pigmentation is much more uniform.

Vagabond's disease usually permits of ocular demonstration of the cause of the irritation, and on removal of the cause the pigmentation gradually fades.

Von Recklinghausen's disease presents very varying aspects; occasionally the pigmentation is marked, whilst the other skin alterations and the neurofibromata can only be detected upon minute examination.

Hæmochromatosis is a rare disease; the pigmentation is often, but not invariably, associated with glycosuria and cirrhosis of the liver; occasionally detected during life.

Exophthalmic goitre is usually associated with increased sweating, and this is said to cause pigmentation through irritation. The nature of the pigmentation is very similar to that of Addison's disease, but the other symptoms permit of the differential diagnosis.

Pigmentation due to arsenic simulates most closely that of suprarenal disease, and cannot be distinguished from it merely by inspection. There are many methods of differentiating, and these Grünbaum deals with.

Argyria presents a colour very different from the pigmentation in Addison's disease. The parts exposed to light are of the deepest colour, and are slate-grey, not brown.

The darkening of the skin due to exposure to heat, such as occurs among stokers, does not, as a rule, present much difficulty, for the lower part of the body is usually normal in colour, since stokers are in the habit of wearing trousers whilst at work.

Melanasma, due to melanotic sarcoma, is usually uniform, and, in the majority of cases, the primary lesion can be found. When this is not possible the differential diagnosis is often difficult.

Kaposi's disease, in its typical form, leads to the development of epitheliomata, but there seems to be a number of varieties of differing malignancy. Grünbaum has seen such a close crop of freckles that the face, of a dark brown colour, seemed to betoken an advanced case of Addison's disease, whilst the pigmentation in the mouth resembled that of melanotic sarcoma, being intensely black and extremely patchy.

There are other conditions which are accompanied by considerable increase in pigment, but the above are the commoner, and, in the majority of cases, may be distinguished from melanasma suprarenale by careful observation.

The blood-pressure in Addison's disease is low—usually less than 100 mm. Hg. Grünbaum finds that it is characteristic of this disease *that the low blood-pressure can be raised by the administration of suprarenal extract;* whereas it was found that, in those cases which were pigmented from other reasons, the blood-pressure was not raised by the administration of the drug. The results have been sufficiently constant to permit him to base diagnosis upon the following method :—

The blood-pressure is estimated upon three occasions, and the heart is examined to determine whether there is any valvular lesion. If the pressure is low and there is no valvular lesion, a trustworthy extract of suprarenal gland is administered three times a day, in 3-gr. doses, for three days. The blood-pressure is then estimated again, and, if there is a rise of more than 10 per cent, the probability that the patient is suffering from adrenal insufficiency approaches a certainty. No other drugs must be taken for at least three days before the first observation is made. Not infrequently a patient with a low pressure does not react to suprarenal gland, but does to strychnine; this, if of any value, is additional evidence against the probability of the disease being Addison's.

At a meeting of the Société Médicale des Hôpitaux of Paris, on February 8th, M. Siredey and M. C. Tinel[2] called attention to the phenomenon known to French clinicians as the " white line " in the diagnosis of disease of the suprarenal capsules. This phenomenon was first described by M. Sergent in 1903.[3] It is the converse of the meningeal streak. Like the latter, it is produced by drawing the finger nail across the skin of the patient's abdomen. After a period of from thirty to sixty seconds a white line appears, which lasts from two to five minutes. M. Sergent has found it in Addison's disease and in a variety of conditions—the specific fevers, septicæmia, influenza, poisoning by corrosive sublimate, exhaustion from over-exertion—which were all marked by low arterial tension. He thinks that the low tension is due to some alteration in the cells of the suprarenal capsules, a conclusion which was confirmed by the fact that the administration of suprarenal extract was followed by the disappearance of both the " white line " and the low tension. He therefore regarded the " white line " as a symptom of suprarenal insufficiency, and insisted upon its importance in the diagnosis of all affections of the suprarenal capsules. His observations have been confirmed by other French writers. At the meeting mentioned above, M. Siredey and M. Tinel reported an interesting case of tuberculous meningitis, in which the meningeal streak was replaced by the " white line " in consequence of involvement of the suprarenal capsules in the disease. A man, aged forty-seven years, was taken to hospital comatose. The history, given by his son, was vague. It appeared that the patient had suffered from pleurisy ten months ago, from which he rapidly recovered. For some weeks he had shown signs of weakness, and three days before admission he was found unconscious. On admission he was in a state of profound coma, with carphology and subsultus tendinum. Trismus, rigidity of the neck, and Kernig's sign were found. The pulse was small and the respiration irregular. Examination of the chest showed generalized bronchitic râles and consolidation at the apices. On attempting to obtain the meningeal streak a thin rose line was produced, which rapidly became white and then slowly broadened, so that after half a minute it was from one to two centimetres in breadth ; it disappeared after two or three minutes. This phenomenon caused suprarenal disease to be suspected. With Potain's sphygmomanometer the vascular tension was found to be only 12. There was no pigmentation of the skin, nor were spots present on the mucous membranes. Death occurred on the following day. The necropsy showed meningeal, pulmonary, and peritoneal miliary tuberculosis. Neither the kidneys nor the liver showed any tubercles, but the suprarenal capsules contained large tubercles. Thus M. Sergent's conclusion as to the value of the "white line" as a symptom of suprarenal disease was confirmed. In the discussion which followed, M. Sergent referred to the case of a girl who presented symptoms of meningitis. He could not obtain the meningeal streak, but after some seconds a white line appeared, which lasted two or three minutes. The patient died, and the necropsy showed absence of disease of the meninges but complete caseation of the suprarenal capsules. In connection with this case M. Sergent has described a pseudo-meningeal syndrome due to suprarenal insufficiency, in which the "white line" is present. As to the mechanism of the production of the "white line," it appears to be a reflex spasm of the capillaries provoked in conditions of low vascular tension and vasodilatation.

REFERENCES.—[1]*Pract.* Aug. 1907 ; [2]Abst. in *Lancet*, Mar. 30, 1907 ; [3]*Presse Méd.* Nov. 25, 1903.

ADENITIS, SUBACUTE INGUINAL. *J. W. W. Stephens, M.D.*

Lop[1] describes in sailors coming from Java, but not in those from other parts of the world, swellings in the groin as big as apples, painful, and which, if not treated, break down and suppurate. Venereal or other causes can be excluded. They have been mistaken for plague buboes, and also for tuberculous glands. Their nature is unknown.

REFERENCE.—[1]*Gaz. d. Hôp.* Jan. 24, 1907.

AINHUM. *J. W. W. Stephens, M.D.*

D. M. Alexander and R. Donaldson[1] describe a case in a native of Jamaica, aged 44, who had gone to sea at the age of fourteen. The affection began when he was 24 years old as an excrescence on the inner side of the flexor aspect of the minimus of the right foot in the flexure of the distal interphalangeal joint. The patient pared it down as a corn, months elapsing between each application of the knife. The authors state that the little toe appeared as though a hair or some fine ligature had been drawn tightly round the distal joint. Noteworthy points in this case are the long duration, and its occurrence in a sailor.

H. A. Spencer[2] states that the affection is common amongst the Basutos in the Transvaal. The author attributes the lesion to mechanical injury produced by stalks of grass cutting the tissue of the interphalangeal joint of the little toe during walking. The incision so produced, or resulting fibrous cicatrix, does not surround the toe, but always occupies the natural fold beneath and on the inner surface of the toe. The author further states that natives when starting for a long walk frequently tie the little and fourth toes together with grass to avoid the web of the foot being cut by the grass as they walk.

References.—[1]*Lancet*, Sept. 29, 1906; [2]*S. African Med. Rec.* April 10, 1907.

AKATAMA.

J. W. W. Stephens, M.D.

F. C. Wellman[1] states "that this is an affection in Portuguese West Africa characterized by swelling, erythema (which can be seen only in light-coloured natives), prickling sensations, burning, numbness, and sometimes excessive sweating. These symptoms appear on the legs and arms, and occasionally on any part of the surface of the body. Aphasia and other motor disturbances are never seen. In severe cases the walk is peculiar, a tendency to curl the toes, as if walking on the heels and ends of the toes." In the cold weather patients are sometimes unable to walk at all. The author gives the following additional diagnostic characters: (1) Nerves of special sense—sight, hearing, etc.—not affected; (2) No wasting of muscles; (3) Vesicles along tracks of nerves, with subsequent desquamation, not seen: (4) No excoriation of mucocutaneous orifices; (5) Is probably a mild peripheral neuritis, or an angiospastic neurosis. These signs suffice to distinguish it from Strachan's disease (a multiple neuritis), Raynaud's disease, beri-beri, malarial neuritis, etc.

Reference.—[1]*Pract.* Feb. 1907.

ALBUMINURIA, INTERMITTENT OR FUNCTIONAL.

J. Rose Bradford, D.Sc., M.D.

Much difference of opinion is still entertained with reference to the nature and pathology of intermittent or functional albuminuria. Some authors regard this condition as entirely of functional origin, whereas others look upon all albuminuria as dependent on a renal lesion which, however, may often be very slight. There can be no doubt that in some instances a definite organic lesion may produce an albuminuria that is strictly intermittent in its duration: this is seen not only in cases of subsiding nephritis, but also in such a chronic and serious lesion as granular kidney. But, notwithstanding the fact that intermittent albuminuria may be due to organic lesions, the fact that in a large proportion of cases no serious results follow has led to the belief that in these cases, at any rate, the albuminuria is of functional origin.

Sérane[1] considers that cases of intermittent albuminuria may be divided into three groups: (1) Those of orthostatic or postural albuminuria; (2) Cyclical albuminuria; and (3) A variety which he names intermittent pretuberculous albuminuria.

1. The characteristic of postural albuminuria is not that it is an albuminuria *influenced* by the upright posture, but that it is entirely *dependent* on the assumption of the upright posture. In these cases, if the patient maintains a horizontal position, neither diet nor exercise will produce any albuminuria; and, further, the albuminuria will disappear in forty or fifty minutes after the assumption of the horizontal posture. It is further characterized by the fact that it is at its maximum two or three hours after rising in the morning; and that it diminishes, and even disappears, in the late afternoon. Further, if the hours of rising and of going to bed are altered, the albuminuria varies in like manner. Postural albuminuria is entirely uninfluenced by diet, even by a diet restricted to milk only. The amount of albumin may be as great as 50 cgrams or even a gram to the litre. It is exceptional for quantities greater than this to be present. These patients may present other symptoms, such as headache, and, according to Sérane, even epistaxis and slight œdema, and this author states that not uncommonly there may be slight enlargement of the left side of the heart. Vasomotor disturbances are not uncommon, and such patients suffer from cold extremities, a tendency to chilblains, and cyanosis. In the majority of instances postural albuminuria is not a serious affection; but Sérane is of opinion that in some instances an albuminuria which was at first of a postural type may ultimately assume the characters usual to that seen in chronic nephritis.

2. In cyclical albuminuria, the upright posture is stated not to influence the albuminuria, which appears usually about the middle of the day. In these cases it is usual to find crystals of oxalate of lime in abundance. Hyaline casts are stated to be more frequently present in cases of cyclical albuminuria than in the postural variety, and some authors have stated that they are always absent in the latter.

3. Teissier has described an intermittent albuminuria in cases of patients coming of a tuberculous stock, and he states that exacerbations of bronchitis and of pulmonary congestion may often alternate with the development of albuminuria in such patients. Sérane draws attention to the great frequency with which a history of some infective disease, such as scarlet fever, diphtheria, mumps, rheumatism, tuberculosis, and syphilis, is obtained in cases of intermittent albuminuria. In other instances over-exertion, mental or physical, is possibly a factor in the etiology.

Collier[2] has drawn attention to the great frequency with which albuminuria occurs in athletes. Amongst 156 men examined by Collier when training for boat-racing, and tested with nitric acid, only forty-nine failed to show the presence of albumin after severe exercise, and in eighty-one cases a considerable amount of albumin was present. When a more delicate test, such as heat and acetic acid, was employed, albumin was found to be present in fifty-seven per cent, and his observations show that albumin may be present in the urine after exercises in the case of picked athletes who present no signs of ill-health; and that the presence of albumin in the urine after exercise is not to be taken as an indication for rejecting such candidates for life assurance and other such purposes.

Heywood[3] considers that the albuminuria of adolescence may be divided into two groups, according as to whether it is constantly or occasionally present; when the former, there may be cyclic variations; when only occasionally present, it may have definite postural characteristics. The albuminuria of adolescence may be due: (1) To severe and prolonged exertion, as in the form described by Collier alluded to above; (2) To cold bathing; (3) To dietetic causes; (4) Possibly overwork and excitement. To a number of drugs and poisons, such as turpentine, lead, mercury, carbolic acid, etc., all capable of producing definite renal lesions.

REFERENCES.—[1]*Gaz. d. Hôp.* July, 1907; [2]*Brit. Med. Jour.* Jan. 1907; [3]*Med. Chron.* June, 1907.

ALOPECIA VULGARIS.

E. Graham Little, M.D., F.R.C.P.

Delos Parker[1] claims to have made a study during the past ten years of the subject of alopecia, and to have discovered a toxic agent with which he can produce loss of hair and feathers in animals. His theory is that the common fault of imperfect respiratory efforts, by which a large portion of the respired air is retained in the lungs at the apices, is responsible for most cases of baldness. To test his theory he took a sterilized glass vessel filled with distilled water and fitted with an exit and entry glass tube after the manner of a laboratory water-bottle, and caused the water to be partially replaced by expired air: the bottle was then shaken up with the remaining water and the air thus admitted, and placed in an incubator at the body temperature for ten days. Injections of the water with the expired air in solution were then made into hens, pigeons, and dogs, daily for five months. At the end of this time the animals had all lost their hair or feathers, either partially or wholly, but showed no other signs of impaired health. Six weeks after cessation of the injections the hair returned completely on the experimented animals. Control experiments were made with solutions of air freshly expired and not placed in an incubator, and these proved negative. His theory is that it is the residual air found in the upper part of the lungs of persons who do not empty their chests adequately which furnishes a selective poison that causes loss of hair. The nature of this poison was thought to be a ptomaine produced by the action of bacteria on the nitrogen in the expired air: but the residue of the solution used when evaporated to dryness and stained showed no bacteria, and the expired air, tested with culture media, proved to be sterile. A crystalline and waxy substance was produced by agitating the expired air which had been dissolved and incubated in distilled water, in a sterile flask with ether, and evaporating the latter: the deposit thus obtained was dissolved in distilled water and injected into animals, with the result of ensuing loss of feathers in a bird. This substance he proposes to name **Trichotoxin,** and his experiments with it show it to be a crystalline non-volatile substance, of a yellowish colour, completely soluble in water and ether, but in alcohol leaving a residue undissolved. The residue and filtrate from the alcoholic solution were tested separately, and it was ascertained that the portion not soluble in alcohol was responsible for the effects produced, the filtrate, which he names **Stearotoxin,** remaining inert. It was found that this trichotoxin developed in a mixture of respired air and water incubated for from six hours to four days. The power of producing trichotoxin is destroyed by heating this mixture of air and water to 80°, a circumstance which renders it probable that a ferment is concerned in the production of this reagent. One gallon of expired air, dissolved in water and incubated, as described above, produces about $\frac{1}{53}$ gr. of trichotoxin, and $\frac{1}{300}$ gr. of stearotoxin. An apparatus has been devised for collecting these products in larger bulk, and the experimenter thus obtained 11·8 gr. of trichotoxin and 2·30 gr. of stearotoxin. It is claimed that, clinically, treatment directed to improving the respiratory efforts at emptying the upper parts of the lungs was successful in proportion to the completeness with which it was applied in the case of persons suffering from baldness, in some instances for twenty years. These exceedingly interesting experiments will no doubt be rigidly tested.

Lassar[2] recommends the following local treatment :—

R	Sod. Carb.		Saponis	70 grams
	Pot. Carb.	āā 15 grams	Aq. Rosæ	100 grams

The scalp is to be shampooed with this preparation and with warm water, then washed with plain water and dried with towel. Applications are then made of :—

R	Hydrarg. Bichlor.	0·30 gram	Aq. Dest.	150 grams
	Phenol. Liq.	·6 gram		

To be applied for half-an hour on a compress.

When the compresses are removed the hair is dried in the air, and the scalp then rubbed with :—

R	Thymol	0·25 gram	Alcohol at 90°	100 grams

After this has dried, a small quantity of the following ointment is used :—

R	Acid. Salicyl.	·1 gram	Ol. Oliv.	50 grams
	Tinct. Benzoin.	2 grams	Ol. Bergamot	gtt. xv

Jessner[3] recommends the following formulæ :—

R	Resorcin.	2	Sp. Camph.	20
	Acid. Salicyl.	2	Ol. Ricini	Þ 5
	Acid. Tannic.	6	Sp. Coloniensis	q.s. ad 200

To be applied to scalp.

℞	Chloral Hyd.		Ol. Ricini.	5
	Acid. Tannic.	āā 6	Sp. Vin. Rect.	ad 200
	Tinct. Benzoin.	1		

℞	Acid. Tartar.	10	Ol. Ricini	2
	Acid. Salicyl.	1	Sp. Vin. Rect.	ad 200
	Sp. Coloniensis	20		

REFERENCES.—[1]*Med. Rec.* Feb. 1907; [2]*Deut. med. Woch.* July 5, 1906, quoted by *N.Y. Med. Jour.* Dec. 15, 1906; [3]*Med. Rec.* Feb. 16, 1907.

AMBLYOPIA, TOXIC. (*See* OPTIC NERVE, DISEASES OF.)

AMPUTATIONS.

Priestley Leech, M.D., F.R.C.S.

Amputation at Ankle-joint.—Gordon Watson[1] describes the following operation, which leaves the heel intact and may be very useful in some cases of injury and limited disease. The operation somewhat resembles Le Fort's modification of Pirogoff's amputation, and may be termed "trans-calcaneal amputation of the foot."

TECHNIQUE.—For the anterior flap the following three points are taken, half an inch below and half an inch behind the tip of the internal malleolus, a quarter of an inch below the tip of the external malleolus, and one and a half inches below the midpoint of a line joining the tips of the two malleoli across the dorsum. A semilunar flap is cut joining these two points. The plantar flap is then cut by an incision dividing skin only, which extends from the inner extremity of the anterior flap downwards and forwards to half an inch in front of the prominence of the scaphoid; then transversely across the sole to half an inch in front of the prominence of the base of the fifth metatarsal, and then straight back to the outer extremity of the anterior flap. The anterior flap is then dissected up, the extensor tendons are divided, the anterior tibial and musculocutaneous nerves are cut short, and the dorsalis pedis artery is ligatured. The ankle-joint is opened from the front, the foot forcibly depressed, the internal lateral ligament divided from its attachments to the astragalus with the edge of the knife held close to the bone, and the anterior and middle fasciculi of the external lateral ligaments are similarly dealt with. The foot is inverted, and the interosseous ligament between the astragalus and os calcis is divided. The astragalo-scaphoid joint is opened, the head of the astragalus is freed from the scaphoid, and the astragalus is twisted and removed. The next step is tenotomy of the tendo Achillis and division of all contracted fibrous tissue around it, taking great care to avoid the posterior tibial vessels and nerve. With a broad gouge the cartilage is removed from the lower surface of the tibia, working from within outwards. The malleoli are then cleared of cartilage, and the posterior inferior tibiofibular ligament removed. With the foot well depressed and pulled forwards, the upper articular surface of the os calcis is cleared of cartilage, either by sawing off a thin slice with a fine saw, or with a gouge. Owing to the slope of this surface, it is necessary to take a little bone as well from the posterior part of this surface. The sinus pedis is then cleared of all fibres of the interosseous ligament and extensor brevis digitorum. Then so much of the sustentaculum tali is cut obliquely as will allow the os calcis to fit into the hollow between the malleoli. Up to this point the front of the foot has been left articulated to the os calcis for purposes of manipulation. The os calcis is now disarticulated from the cuboid, and then cut through the soft tissues of the sole. The plantar vessels are held, the plantar nerves cut short, and all bleeding points secured. About a quarter of an inch of the anterior extremity is then removed, and the os calcis is brought into apposition with the tibia and there fixed with a six-inch excision pin driven through the sole, with about two inches left projecting. A second pin may be used, and passed through the tibia into the os calcis, and tension after suture and dressing kept up on the projecting ends by rubber tubing passed in a figure-of-eight round them. The stump is put up in plaster-of-Paris when stitches and pins are removed. Plaster is then re-applied, and the patient is allowed to get about with the leg flexed on a peg leg. Plaster should be continued until firm bony union has occurred, and the patient must not be allowed to put his foot to the ground for three months, when an artificial foot can be fitted and gradually made use of. He reports two cases of the operation.

Gritti's Amputation.—Szczypiorski[2] publishes five personal cases of Gritti's amputation with metallic suture of the patella and end of the femur. In four of the cases he used a circling transverse suture, and in one the posterior vertical suture suggested by Gritti in 1900. He gives references to other twelve cases published in France since 1900. The stump in all has been good, and has been applied directly to the prosthetic apparatus.

REFERENCE.—[1]*Lancet*, Aug. 10, 1907 ; [2]*Gaz. d. Hôp.* Oct. 25, 1906.

ANÆMIA, PERNICIOUS.

J. G. Emanuel, B.Sc., M.D.

Although it is doubtless true that in a considerable proportion of cases of pernicious anæmia, or perhaps we should more correctly say of cases which present all the clinical features of pernicious anæmia, we are able to find a primary cause, yet a fair number still remain in which we are totally at a loss to account for the blood destruction. To Hunter belongs the credit of having done the lion's share in the solution of the mystery which enshrouds this disease, and his belief that it is due to a specific infection arising in the mouth, stomach, or intestine, associated with the production of a substance of a hæmolytic nature, is steadily gaining ground. It is only fair, however, to expect that treatment directed to the destruction of the infective foci by oral and intestinal antiseptics should be productive of better results than those which have hitherto followed the use of hæmatinics, and evidence on this point is badly needed.

Hollis and Ditman[1] report two cases of well-marked pernicious anæmia in which, after various remedies had failed, daily high **Irrigations of the Colon** were tried. The result was an immediate improvement ; in one case the red count rose from 900,000 to 3,800,000, and in the other from 1,300,000 to 5,000,000, while both patients seem restored to perfect health. It is, of course, unwise to draw conclusions from two cases, especially in this disease, which is characterized by extraordinary remissions extending over many months ; but, at the same time, the treatment appears rational, and deserving of further trial.

McCaskey,[2] finding that the urine in a case of pernicious anæmia contained a great excess of purin bodies, thought that the presence of such bodies in the blood might account for the hæmolysis which lies at the root of the disease. He therefore performed the following experiment : To a suspension of red corpuscles in normal saline he added a solution of the purin bodies obtained from the urine, in such quantity that the resulting mixture contained 0·05 per cent of purin bodies. In the course of twenty minutes he found that many of the red cells had undergone marked changes, being merely represented by débris ; a control mixture without the purin bodies, but similarly treated in other respects, did not show these changes.

Wroth,[3] working on much the same lines as did Capps in estimating the relation between the volume of the red cells and the hæmoglobin content, found that the increase in volume of the cells in pernicious anæmia was as great as the increase in the colour index ; that is to say, the Hb content of a cell is not out of proportion to its volume. In secondary anæmias, on the other hand, the Hb content of the cell is diminished, and the cell volume is usually diminished, though not as a rule to as great a degree as the Hb content. Moreover, he finds that cells which in the fresh state appear larger than normal, under the microscope may, on account of a decrease in thickness, be actually of less than normal volume.

REFERENCES.—[1]*Med. Rec.* Feb. 2, 1907 ; [2]*N.Y. Med. Jour.* Nov. 24, 1906 ; [3]*Johns Hop. Hosp. Bull.* Feb. 1907.

ANEURYSM.

Alfred H. Carter, M.D., F.R.C.P.

So much attention has been paid to syphilis as a cause of aortic aneurysm, that the influence of rheumatism, especially in young patients, has been unduly forgotten. Several cases have been collected by Feyland[1] in patients who have had several attacks of acute rheumatism, with an average age of from ten to fifteen years. Such aneurysms usually affect the right upper costal area, and do not differ materially in their signs and symptoms from cases of other origin occurring in this area.

Young[2] reports a case of a large aneurysm of the transverse part of the thoracic aorta, extending to the left and high up into the neck in front. On the upper part was a secondary aneurysm, which was only covered by very thin layers of skin and tissue, and seemed on the point of bursting. Though regarded as a forlorn hope, the man was kept absolutely at rest in bed, placed on a restricted diet, and given **Iodide of Potassium**—at first in 10-gr. doses, gradually increased to 1-dr., three times a day. The result was most successful, for in the course of two months the tumour was much smaller, with scarcely any pulsation, the secondary swelling had disappeared, the skin over the tumour was normal, and the patient returned to work, feeling better and stronger "than he had been for four years." This case is quoted as showing what may be accomplished sometimes in apparently hopeless cases by systematic treatment on the usual lines.

Bassett-Smith writes a paper on this subject,[3] with statistics showing the prevalence of aneurysms in the Royal Navy.

For the surgery of aneurysms, see Blood-Vessels.

References.—[1]*Thèse de Paris*, 1906, in *Brit. Med. Jour.* Jan. 12, 1907 ; [2]*Lancet*, Sept. 22, 1906 ; [3]*Brit. Med. Jour.* Aug. 31, 1907.

ANGINA PECTORIS.

(*Vol.* 1900, *p.* 258)—Between the attacks, the aim of treatment should be to diminish the frequency and the intensity of the anginal paroxysms. Practical suggestions to this end are : Enjoin rest after meals, moderation in exercise, and abstinence from cold baths. Water should be taken plentifully, but tea, coffee, and alcohol are forbidden. Give **Iodide of Potassium**, gr. xxx–xl daily, for two or three weeks in each month. For the rest of the month give **Trinitrin**, gr. $\frac{1}{100}$ daily. (*Vol.* 1904, *p.* 146)—**Diuretin**, gr. xl, daily in divided doses is also said to lessen the acuteness and the frequency of the attacks.

ANGIONEUROTIC ŒDEMA.

(*Vol.* 1907, *p.* 110)—**Aspirin** has produced a cure in doses of 30 to 50 grains per diem. **Ichthyol**, gr. iij, given three times daily has also cured an obstinate case. **Thyroid Extract** is also recommended.

ANKYLOSTOMIASIS.

J. W. W. Stephens, M.D.

A. E. Boycott,[1] in a paper on "Anæmia in Ankylostomiasis," discusses the points in which this form of anæmia differs from that of idiopathic pernicious anæmia. He points out (1) That in "ankylostomiasis" we have two different nematodes, viz., *A. duodenale* and *N. americanus*, producing identical results, and (2) That only a certain—rather small—number of those infected with "ankylostoma" ever suffer at all from any anæmia, although they may show eosinophilia. The symptoms of ankylostomiasis are practically identical with those due to the idiopathic disease, but there is this marked difference, viz., that the degree of anæmia bears a different relation to the severity of the symptoms in the two diseases. The same amount of anæmia gives rise in the idiopathic form to much greater prostration than in the nematode form. If patients suffering from ankylostomiasis are removed from the source of infection they show a great tendency to a natural cure, whereas in pernicious anæmia there is a progressive intensity of the symptoms until fatal. In the examination of the blood many other points of difference present themselves : (1) In pernicious anæmia the colour index is about 1 or greater ; in ankylostomiasis it is low, and as the hæmoglobin falls it becomes still lower. Eosinophilia is present in ankylostomiasis, but not in pernicious anæmia. As regards anisocytosis, poikilocytosis, polychromasia, normoblasts, and megaloblasts, one may say generally that these conditions are much less marked in ankylostomiasis than in pernicious anæmia. (2) The volume of the blood in ankylostomiasis, as determined by the author in three cases, is nearly twice that found normally, the condition being one of hydræmic plethora: the apparent anæmia is almost entirely due to the diluted condition of the blood, the total amount of hæmoglobin in the body being practically normal, and the total number of red cells a good deal in excess of the normal. In pernicious anæmia there is, however, a real deficiency of hæmoglobin. The production of the condition of hydræmic plethora in ankylostomiasis is at present beyond our powers to explain.

Reference.—[1]*Brit. Med. Jour.* Nov. 9, 1907.

ANTHRAX.

(*Vol.* 1906, *p.* 118)—In mild cases make a crucial incision into the pustule and swab it out thoroughly with wool on a probe soaked in pure carbolic acid. In severer cases the pustule may be excised. In all cases inject **Sclavo's Serum** in doses of 30 cc., repeated on the following day if necessary, under the skin of the abdomen; or in 10 cc. doses into the veins of the hand or arm.

ANTRUM OF HIGHMORE.

P. Watson Williams, M.D.

Operation for Chronic Suppuration.—The relative merits of the intranasal or the canine fossa route for gaining access to the antrum (*Figs.* 25, 26) in chronic cases requiring a more or less radical operation is still hotly debated. Entrance through the inferior meatus is more difficult to accomplish through the natural passages; but a still greater drawback is the impossibility of proper inspection of the antral cavity, so that accurate determination of the amount of the antro-nasal wall and its diseased mucous membrane coverings that have to be removed is out

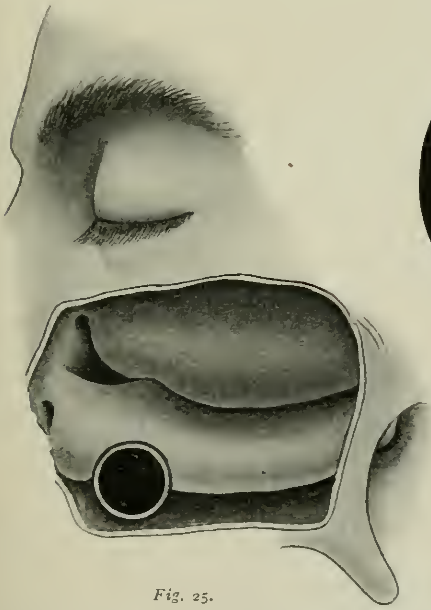

Fig. 25.

Fig. 26.

Fig. 25.—The circular aperture trephined into the nasal passage, including the corresponding portion of the inferior turbinal.

Fig. 26.—The relative size of the aperture after healing is completed. (Watson Williams).

of the question. The writer has abandoned the intra-nasal route, and now adopts the following method in all cases that require more than simple perforation and drainage. He uses a sixpenny-sized trephine with a gimblet-pin, and with this, after incision and retraction of the periosteum, a circular opening is made into the antrum corresponding to the canine fossa. Careful inspection of the antral cavity enables one to determine how far the pyogenic mucosa must be sacrificed, and whether the region of the unciform process and hiatus semilunaris is degenerated and indicative of diseased ethmoidal cells requiring extirpation. Whatever is found necessary is done, and then with the same trephine a circular opening is made through the anterior portion of the inner antral wall so as to come out just behind the anterior end of the inferior turbinated body, close to the antral floor, removing at the same time the corresponding portion of inferior turbinal. In this way a perfectly circular opening is made into the antrum sufficiently near the nasal aperture to enable the patient himself to wash out daily through the nose, the buccal opening being allowed to close at once. The circular smooth edge of the opening is much more convenient, and heals more rapidly, than the irregular margin of a forceps or hammer-and-chisel opening.

ANURIA. (*See* KIDNEY, SURGERY OF.)

ANUS (Diseases of).

(*Vol.* 1906, *p.* 123)—*Fissure*, if recent, should be painted with pure **Ichthyol** on the end of a probe; this may lead to its cure in a few days. (*Vol.* 1902, *p.* 113)—*Pruritus*. Tuttle recommends this formula: ℞ Acidi Carbolici, ʒij; Acidi Salicylici, ʒiss; Sodii Biboratis, ʒj; Glycerini, ℥j. To be applied at bedtime, and during the night if necessary.

APHONIA (Hysterical).

(*Vol.* 1899, *p.* 125)—Aphonia is successfully treated, according to Middlemass Hunt, by teaching the patient to sing. First the vowels *a e i o u* are sung, and then the numerals "one," etc., up to "ten." Respiratory exercises should be practised at the same time.

APOPLEXY.

(*Vol.* 1906, *p.* 125)—Allbutt makes suggestions as to the prevention of cerebral hæmorrhage. Men between 40 and 60 should have their arterial pressure measured at regular intervals. A steadily rising tension indicates: Abstinence from alcohol, reduction in the amount of food eaten, regulation of exercise, Spa treatment in some cases, and the systematic administration of **Mercurial** and **Saline Aperients**.

APPENDICITIS. (*See also* HERNIA and PERITONITIS.)

Rutherford Morison, F.R.C.S.

It is now generally admitted that many of these cases get well and require no immediate operation. Such patients are obviously never seriously ill, and recover in a few days with rest and abstinence from food and purgatives. A first attack, if entirely recovered from, need not be followed by an interval operation. A tender nodule or a variety of uneasy sensations or marked tenderness left after an attack demands operation. Relapse or recurrence of the illness is due to permanent pathological changes in the appendix, and indicates excision as the safest treatment. The serious cases only should be dealt with by immediate operation, i.e., within the first twenty-four hours.

How are the serious cases which demand operation to be diagnosed from the milder cases which may safely be left ? First, by the history of their commencement. They begin with pain so urgent as to convey an unmistakeable message. Later a rigor or diarrhœa indicates a severe lesion of the appendix. The early diagnosis of appendicitis from other abdominal emergencies, which all produce similar symptoms, is chiefly based upon two signs—the first a definite localized rigidity of the abdominal wall muscles over the appendix; the second a marked deep tenderness in the same neighbourhood. The enlarged and tender appendix can occasionally be felt, and this is conclusive evidence, though but seldom forthcoming.

The prognosis in children is so serious that all cases in which a definite diagnosis can be made demand immediate operation.

Until the need for immediate operation in these cases is more fully recognized, abscess and general peritonitis will exact their toll of victims. The greatest advance to be made in the treatment of appendicitis depends on the skilful diagnosis and prompt action of the general practitioner. An early operation is safe and easy, and by it the development of an abscess or of peritonitis can, and should be, prevented.

Relief of severe pain and the development of signs of peritonitis mean rupture of the appendix. A tender, definite lump after the third day means an abscess. Early operation is indicated in either case. The operation in both should allow of removal of the appendix and provide for drainage. In some serious cases of appendicitis and general peritonitis, with the abdomen *tense and distended*, our belief is that more recoveries will follow without than with immediate operation.

The magnificent results of L. A. Stimson, of New York, epitomized below, induce us to record our views on the principles of operative treatment. We hold that the great surgical revolution brought about by Lister's work is due, more than to anything else, to the possibility of *seeing* what has to be done, and consequently, how it can best be accomplished. It is quite certain that an oblique incision through the abdominal wall, parallel to its nerves, allows of complete repair without subsequent hernia. This clean-cut wound—long enough to allow of free exposure of the parts—we prefer to muscle splitting.

In all acute cases, before doing anything else, the abdominal wall is gently but firmly drawn forward by a large retractor, and above, below, and inside of the cæcum are packed carefully round with gauze. Then, but *not till then*, search is made for the appendix. In abscess cases the incision is a long oblique one, extending to the back of the ileocostal space, and the pus as it escapes is directed toward the lower back part of the incision, and mopped away.

The appendix is nearly always (95 per cent) sought for and removed. Every blood-vessel in the meso-appendix is carefully tied. The stump of the appendix is dealt with by clamping ligature and cauterization, and is then somehow or other enfolded by a peritoneal covering. If the appendix is found detached, we make a persevering effort to secure its cæcal attachment and deal with it in the ordinary way. In none but the most serious cases is haste necessary, but in all, careful arrest of hæmorrhage, thorough precautions to prevent diffusion of sepsis, and complete repair of openings into the intestine are regarded as essential. There are, it must be admitted, surgical artists who can transgress every surgical canon, not only with impunity, but with brilliant success. Unfortunately it is not possible for them to hand on their secret, and general surgical improvement has to be expected from more ordinary methods of progress.

H. W. Carson[1] reports upon the last 100 cases operated upon by him. In every case but one the appendix was removed. The abdomen in all was opened by an incision at the outer edge of the rectus muscle, which was displaced inwards to allow of division of its posterior sheath. Four clinical groups are recognized:—

1. *Quiet Relapsing Cases.*—Of thirty cases, one died suddenly twenty-four hours after operation; one developed intestinal obstruction, which necessitated a second operation, and then recovered; in the remainder recovery was uneventful.

2. *Acute Catarrh.*—These include cases which would in all probability have gone on to abscess formation if not cut short by early operation. There were eight cases. The fact is emphasized that only in eight out of seventy severe cases was the appendix removed in time to prevent abscess formation. [This is a point of supreme importance. The ideal surgery is to take out the appendix before infection has extended from it to the general peritoneum, and it is necessary to teach that peritonitis and abscess are the result of lost opportunity.—R. M.] In two of these eight cases the appendix was free from adhesions, distended with pus, but without ulceration. In two cases there was ulceration from within, perforation being prevented by the serous coat; in one perforation had occurred, but a leak was prevented by adhesion to the cæcum; in one there was localized gangrene opposite an enterolith; two were acutely inflamed erect appendices. The operation in these cases was easy; the abdomen was closed without drainage; their average stay in hospital was twenty-three to twenty-five days (against forty-days in abscess cases), and the scar was strong in all.

3. *Localized Abscess.*—These cases are divided into two groups: (*a*) With localized abscess circumscribed by adhesions (pelvic included); (*b*) With general peritonitis. In all cases but one the appendix was removed. This does not add to the risk of the operation, and prevents the formation of the obstinate sinus which so frequently follows mere evacuation of the abscess.

Complications such as fistula, intestinal obstruction, and hernia of the scar, are practically confined to abscess cases. These are sufficient reasons for looking upon abscess as a disaster, and preventing it if possible. A still stronger reason is that the mortality is almost entirely dependent on abscess formation.

An analysis of the figures proves that the first attack is the most severe and the most fatal, that the virulence of the attacks decreases with repetition, and that abscess and general peritonitis are particularly liable to complicate appendicitis in children.

It ought to be a rule in appendicitis in children to remove the appendix as soon as a diagnosis has been made. In making a diagnosis it is necessary to exclude pneumonia, worms, colic, and also other forms of peritonitis.

In all severe cases early operation is the treatment. Over all abscess cases lies the shadow of a death-rate of some 25 per cent (as compared with 1 or 2 per cent when abscess does not form). What are the risks run in this early operation? First, as regards the patient's life. Statistics prove that without abscess the percentage of recovery is high. Second, that some patients recover without operation. As the appendix should be removed in every case after a single attack, this argument is not strong. [We do not hold this view, but await a second attack before operation.—R. M.]

Conclusions concerning cases that are severe and require operation: (1) If the *onset* is severe, the attack will be severe; (2) The *facial expression* typical of a severe abdominal seizure may be present, but will not occur as often in adults as in children, in whom the dull, heavy look in the sunken eyes, the drawn features, and cyanotic lips, are so characteristic: (3) The *tongue* will be furred, but rarely dry unless peritonitis is present: (4) The *temperature* will rarely exceed 102° F. If, after an initial rise, it falls and then rises again, an abscess is forming. A falling temperature with increasing pulse-rate is a grave sign, and is an imperative indication for immediate operation; indeed, it is an indication that operation has been delayed over-long. Severe gangrene may be associated with a subnormal temperature; (5) A rapid *pulse* from the start is evidence of a severe attack. If steadily increasing in rapidity, it suggests peritonitis; (6) If *diarrhœa* occurs the attack is probably severe; (7) *Vomiting* at the start is common. If it cease and recommence, suspect peritonitis; (8) If *pain* disappears and then recurs, an abscess is forming. If pain suddenly ceases while other signs become more severe, gangrene is present; (9) If acute localized *tenderness* persists, or returns after a temporary cessation, an abscess is forming. If there is extreme cutaneous hyperæsthesia, suspect chest trouble, especially in children. If there is general tenderness persisting, suspect general peritonitis; (10) *Rigidity* of the abdominal walls, if persisting after twenty-four hours, is evidence of a severe attack; (11) If *tumour* persists or increases after forty-eight hours, an abscess is forming; (12) *Abdominal distention*, if occurring early and not yielding to enemata, is an indication of gangrenous appendicitis with peritonitis, and is an urgent indication for operation; (13) A high *leucocytosis* from the first is evidence of a severe attack.

[We attach considerable importance to a rigor early in the attack as indicating a severe type with gangrenous appendix.—R. M.]

Herbert A. Bruce[2] says in all cases of acute appendicitis the operation should be undertaken at the earliest possible moment. For the diagnosis temperature and pulse are not to be relied upon. In all the acute cases there has been rigidity of the right rectus muscle. The symptoms are : pain, first referred early to the stomach or umbilicus, later to the right iliac fossa ; nausea or vomiting within the first few hours ; tenderness over the appendix ; elevation of temperature and increase in pulse-rate after some hours. Morphia and purgatives should be avoided before making a diagnosis. Moving a patient carefully in an ambulance does no harm, and these operations are best done in a hospital. If perforation has occurred, the patient should be conveyed in the sitting posture.

The incision is made through the right rectus muscle a little distance from the outer border. All pus must be mopped away as soon as the abdomen is opened. Before dealing with the appendix the general peritoneal cavity is walled off with gauze packing. The appendix, when a mass and pus are present, is best approached from the outer side. Any pus is mopped away and the appendix found and removed. The appendix should be sought for (but only by those skilled in operating) and removed, if possible ; if it is gangrenous, a ligature of chromic catgut is placed round its base, and it is simply cut off beyond.

Lewis A. Stimson[3] gives some practical deductions bearing on the wisdom and character of interference in the gravest form of cases, and drainage, the paper being based upon the statistics of his hospital practice during the past four years. The cases, whilst wholly operative, exclude no admitted case that died : they are roughly grouped according to the character and extent of the peritoneal reaction. Some of the dividing lines are necessarily arbitrary and somewhat vague, and some of the groups might perhaps as fairly be combined with each other as separated.

Group 1.—Cases of general peritonitis. In all there was abundant turbid serum or even thin pus throughout the peritoneal cavity.

Group 2.—Cases in which similar exudates were found beyond the immediate neighbourhood of the appendix and pelvis, but not everywhere.

Group 3.—This reaction was limited to that neighbourhood and to the hollow of the pelvis.

Group 4.—Cases in which there was an abscess completely walled off, with or without adjacent peritoneal reaction.

Group 5.—The numerous cases with which all are so familiar—the "acute suppurative," the "acute gangrenous," and some of the "acute catarrhal" forms—the appendix is swollen, rigid, congested, or perhaps greyish in colour ; sometimes free or with few adhesions, sometimes buried amid them, or behind the cæcum or colon, and then friable and softened by inflammatory changes.

Group 6.—The milder cases ; the subsiding attacks ; some of the recurrents ; those in which the pain seems to have been due to an obstruction of the lumen of the appendix rather than to an acute inflammation ; those, in short, in which the inflammation is but slight.

Group 7.—The "interval" operations.

The cases are as follows:—

Group	1.—General peritonitis	4
,,	2.—Extensive peritonitis	9
,,	3.—Local and pelvic	15
,,	4.—Closed abscess	22
,,	5.—Acute appendicitis	35
,,	6.—Subacute appendicitis	10
,,	7.—Interval operations	3
	Total	98

All except one recovered, the fatal case being in Group 2—extensive peritonitis with a perforated appendix; he survived until the eighth day.

The main principle of the operative treatment has been to do the least that would probably be sufficient to accomplish the object, whether that were the arrest of an appendicitis or of a peritonitis. The work is done rapidly, the incisions are as small as the conditions permit, and the intestines are handled as little as possible and usually protected with flat sponges (not gauze pads) as soon as the peritoneal cavity has been opened. In nine of the ninety-eight cases, in which the position of a palpable mass made approach from the median line advisable, the curved transverse incision with longitudinal separation of the recti (the incision which the author habitually uses instead of median laparotomy) was employed. In all the others McBurney's intermuscular "gridiron" incision was used.

If the finger introduced through the incision finds a mass, one or two flat sponges (not gauze pads) are pressed in and tucked down on the lower side; then the finger is cautiously pressed onwards in the line of least resistance. As soon as pus is seen or felt, it is quickly sponged away; when this has ceased, the cavity is dried. Then the finger is again passed into the abscess cavity to seek and free the appendix. If it can be found and freed, it is simply tied with a catgut ligature after cauterization of its interior with a fine Paquelin cautery point. If the wall of the adjoining bowel can be easily reached and is not inflamed, the stump is invaginated, but not otherwise. In thirty-seven cases the stump was invaginated, in forty-nine simply tied.

When the appendix is found detached or has been torn away by the manipulations used to free it, no great search is made for the stump; it is left for spontaneous closure. Three stumps in this list were so left without recognizable ill result. In difficult cases, or when the patient is old and feeble, the cavity is wiped out and drained only. In seven of the cases in this list the appendix was left untouched, and in only two did it give rise to further trouble—in each after an interval of two months. "I am sure that the removal of the appendix is not necessary to the cure of an appendicitis, and possibly not even to the patient's reasonable security against another attack."

If the pus is free the main reliance has been upon gentle sponging. Irrigation with salt solution has only occasionally been employed, and then with a double tube, and the edges of the incision widely separated to allow of a free escape. Drainage was used in all of the first four groups and in twenty-nine of the forty-eight cases of the last three groups. "I am strongly convinced of the value of drainage, and would not willingly forego the feeling of security which it gives."

"Finally, it has been urged, with statistics to support, that in grave cases abstention will save more lives than operation. The above list contains thirteen cases of general or extensive peritonitis, with only one death. Suppose that not all of the cases should be counted as grave. Cut the list in half and call it six cases, with one death. Can abstention do better? Is not the question rather one of the extent and character of the operative interference? Let that be brief, and limited to what can be done quickly, easily, and with the minimum of exposure and handling of the intestines, and even, if necessary, to drainage alone. Surely nothing is lost by providing an escape for the exudate and reducing the task of the body to taking care of the bacilli and the toxins which it contains. I do not even ask for the washing of the cavity. As I have said, I use it only in moderation as a gentle means of quickly removing a large amount of exudate, with no thought of making that removal complete. In short, let us remember that we are dealing with patients who are very ill, whose strength is already taxed to the utmost by their disease, and who have no reserve with which to meet the drafts we may make upon them, and let us reserve our ideally complete operations for the young, the strong, for those appendices whose potentiality for harm has as yet been only slightly manifested."

Appendicitis in Children.—Kermisson and Guinbellot[4] collected twenty-six cases of appendicitis, including one of their own, in children under two. Nine of these occurred in the first year, seventeen in the second. All the infants under one year died; over twelve months, seven recovered and ten died. In every instance of recovery the age was over eighteen months. Operation was done in nineteen cases. Seven were performed before one year, all died; over one year there were five deaths and seven recoveries. The evolution of the disease in infants is rapid and its prognosis extremely grave. In etiology gastro-enteritis takes the chief place. The diagnosis is very difficult, as in addition to the expected difficulties in infants, the complete and obstinate constipation accompanying this disease misleads by suggesting intestinal obstruction, strangulated hernia, or enteritis.

John F. Erdmann[5] records his experience based on 100 cases operated on in five years. The deadly character of the disease in infants is emphasized, and it is said that owing to late descent of the cæcum the appendix may not arrive at its normal destination till after the third or fourth year, so that the signs may have to be looked for immediately under the costal arch. Greater difficulties in diagnosis are of course present in young children than in adults. "Almost invariably the little patients unconsciously place their hands in the region of the appendix to ward off manipulation in this region." The ages of the patients operated upon varied from one to fifteen years.

Before three years there were three cases. Taking each year separately, most occurred at eleven years, viz., fourteen. There were seven deaths: from pneumonia two, subphrenic abscess one, and general suppurative peritonitis four.

Treatment.—"Once an appendicitis has occurred the patient is always in danger until the organ is removed, and I advise that all such cases be submitted to operation." If the appendix is firmly bound down to other viscera, it is dealt with by splitting the muscular and serous coats and stripping out the mucous, which is removed in the ordinary way. [We have frequently employed this method, and do not think its advantages are sufficiently generally appreciated.—R. M.] When free pus of the serous variety is present in the general cavity, the pelvic basin is sponged dry and the abdomen closed, with or without a drain. When gangrene of the appendix with a suspicious meso-appendix are found, drainage is employed. The entire peritoneal cavity is never washed out. Abscess cavities are sponged dry and drained, or not, as experience has taught to be the best.

After-treatment.—A movement of the bowels is desirable in the first twenty-four hours following the operation. This is secured by small repeated doses of calomel. When free seropus has been evacuated and the abdominal wound is sewed up, and before anæsthesia has disappeared, from ½ oz. to 1 oz. of magnesium sulphate, and from 8 to 12 oz. of water at 100° F., is given by the rectum. Nothing is given by the mouth in the more serious cases until the bowels have been moved or flatus has been expelled per rectum. The patient is allowed to roll at any time, to sit up in bed, if not drained, on the third or fourth day, and to be out of bed on the fourth or fifth day. If drained, the semi-sitting posture is adopted as soon as the effects of ether have passed off, and sitting up in bed is allowed at the earliest possible moment that the wound allows.

Appendicitis in Typhoid Fever.—Charles Leedham Green[6] directs attention to the association of typhoid fever with appendicitis, and to the difficulty which is sometimes experienced in the diagnosis of the two diseases. Typhoid lesions may occur in the appendix itself, or the inflammation may be due to the general congestion and hyperæmia of adjacent intestine extending to it. A previous attack would predispose. These conditions have been proved both by operative and post-mortem examinations. It is difficult in the early stages to determine whether the patient is suffering from typhoid fever or appendicitis, and, if both are present, whether an operation on the appendix should be done. Mistakes may and have been made in three directions: (1) Typhoid fever has been mistaken for appendicitis; (2) Appendicitis has been mistaken for typhoid fever; (3) The presence of both has been overlooked. If gangrene or perforation of the appendix can be excluded, no operation should be performed in the presence of typhoid. There are no certain means of making a diagnosis between typhoid fever and appendicitis, but a differential leucocyte count is probably the most valuable aid. In typhoid fever the count is almost always low, whilst a high count is the rule in appendicitis.

Traumatism as a Factor in Appendicitis.—John B. Deaver[7] writes that the medico-legal aspects of the question of injury in relation to appendicitis make it one of considerable importance. He considers the subject in two questions: (1) Is it possible for injury, direct, as a blow or fall upon the abdomen; or indirect, as by muscular contractions of the abdominal or iliopsoas muscles, to produce an acute attack of appendicitis in a perfectly healthy appendix? (2) Is it possible for injury to produce an acute attack of appendicitis when the appendix is diseased?

From personal experience and from a study of the cases found in the literature, he considers: (1) That trauma is never the direct exciting cause of acute appendicitis in a perfectly normal appendix; (2) That an acute attack of appendicitis can follow a severe blow or fall upon the abdomen, or be due to muscular contractions of the iliopsoas muscle in an appendix which has been previously inflamed, only under certain conditions, depending upon the pathological condition at the time of injury.

The mortality is very high in these traumatic cases on account of the failure to recognize the condition until the disease is well advanced, the rapid gangrene and perforation which occur, and the delay in operation.

Emile Jeanbrau and Jean Anylada,[8] in a pathogenic and medico-legal study of traumatism and appendicitis, sum up the subject thus:

Extensive research shows that an injury does not produce appendicitis in a healthy man. An accident may determine an acute attack in the course of a chronic, often latent, appendicitis, and may terminate with perforation, peritonitis, and death. If forty-eight hours of freedom from pain have followed the accident, the responsibility of the accident may be rejected: attacks returning some time after must be imputed exclusively to disease.

If appendicitis follows a direct blow, or a *severe* strain, the authors think compensation should be paid as for a fracture of the skull.

Foreign Bodies in the Appendix.—H. A. Lediard[9] reports a case of gall-stones in the appendix in a man of 26 years, who had had two attacks of abdominal pain diagnosed as appendicitis. There had never been any signs or symptoms to suggest gall-stones.

D. T. Barry[10] says of calculi in the appendix that they may consist of fæcal moulds; enteroliths with or without a foreign body as a nucleus; gall-stones; or true foreign bodies. More careful examination and analysis of the calculi are required before our knowledge of them is satisfactory.

Intestinal Obstruction in Association with the Appendix.—G. Grey Turner,[11] from personal experience only, classifies obstruction in connection with the appendix as occurring: (*a*) During the acute attack; (*b*) During convalescence, or after operation for acute appendicitis; (*c*) In recurrent cases; (*d*) At some period remote from the acute attack. A rough estimate based on 2500 cases gives the result that one of fifty-three cases of appendicitis developed obstruction. The adhesions due to appendicitis recent or remote are in the male as common a cause of obstruction as tubercle. The adhesions may be general or localized and, speaking broadly, wider adhesions cause purely mechanical obstruction, while bands generally produce strangulation. Where the effects of septic peritonitis are most apt to be felt, there adhesions are strongest; consequently, the cause of obstructing adhesions is usually in the pelvis, or about its brim.

Pelvic Appendicitis.—Gilbert Barling[12] records a case of pelvic appendicitis with par-appendical abscess and cystitis in a man, 42 years, anæmic and sallow, with bladder symptoms, frequent and painful micturition, and pain across the loins. The attack had commenced a year previously, and lasted for twenty weeks, though he had not been quite well since. During the last two months the acute bladder symptoms, and painful frequent micturition with offensive urine, had returned. He had been sounded for stone on two occasions, and many diagnoses had been given. The operation showed the vermiform appendix densely adherent on the right side of the pelvis, and surrounded by pus and adhesions. The appendix was removed and the pelvis drained; the painful frequent micturition soon disappeared, and the patient recovered.

Conditions Simulating Appendicitis.—M. H. Kuttner[13] states that attacks occur in certain subjects imbued with the terror of appendicitis (typhlophobia). Enterospasm can simulate it. Arteriosclerosis of the intestinal arteries, proved by autopsy, has caused unnecessary operation. Neuralgia of the last intercostal nerves, which is not uncommon after influenza, has led to error. Myalgia from exercise or muscular rheumatism is difficult to discriminate. Mechanical pains due to variations in situation, kinking, and variations in the size of the lumen without infection, can give rise to attacks like true appendicitis. The abdomen has been opened for acute appendicitis, when pneumonia, pleurisy, and acute polyarthritic rheumatism were the cause of the pain.

REFERENCES.—[1]*Brit. Med. Jour.* Nov. 10, 1906; [2]*Ibid.* Dec. 15, 1906; [3]*Ann. Surg.* July, 1907; [4]*Brit. Med. Jour.* Dec. 8, 1906; [5]*Med. Rec.* May 1, 1907; [6]*Brit. Med. Jour.* Feb. 5, 1907; [7]*N.Y. Med. Jour.* June 15, 1907; [8]*Rev. de Chir.* July 10, 1907; [9]*Brit. Med. Jour.* Jan. 12, 1907; [10]*Ibid.* Aug. 24, 1907; [11]*Ibid.* Dec. 15, 1906; [12]*Ibid.* May 18, 1907; [13]*Beitr. z. klin. Chir.*

ARTERIES, SUTURE OF. (*See* BLOOD-VESSELS, SURGERY OF.)

ARTERIOSCLEROSIS.

Alfred H. Carter, M.D., F.R.C.P.

Further consideration has been given to the experimental production of arteriosclerosis, but the interpretation of results is beset with many difficulties, arising in large measure from the lack of any general agreement as to the connotation which should be given to the term. It would seem that approximately similar lesions may arise in various ways, and until we acquire more information with regard to pathological processes as distinguished from actual lesions, accurate differentiation of the varieties of arteriosclerosis will be impossible.

Miller[1] records the results of injecting adrenalin, physostigmine, and barium chloride into rabbits; and though in certain cases arterial changes were induced, he is not able to say whether they were due to increased blood-pressure or toxic causes.

Klotz[2] has an article on the same subject, in which he arrives at the following conclusions:—(1) The effect of the high-pressure drugs (adrenalin chloride, digitalin, and barium chloride) on the arteries is a degenerative one, as was described by Fischer and Erb for adrenalin; (2) The muscle cells of the media are first attacked, while the elastic fibres of this layer are also involved later; (3) At a certain stage of the degeneration a fatty change can be demonstrated in the tissues, followed by calcification; (4) The middle zone of the media is always involved; (5) Occasionally secondary reactions occur in the intima which are of a proliferative nature; (6) The effect of adrenalin is not abolished by lowering the blood-pressure with nitroglycerin; (7) The aneurysms are produced as a result of the destruction in the media; (8) These experimental lesions are in every respect similar to the Moenckeberg type of arteriosclerosis; (9) The effect of diphtheria toxins on the arteries is similar to that of the adrenalin series; (10) Typhoid and streptococcus infections produce little destruction of tissue cells, but tend to stimulate cell proliferation in the intima and inner layer of the media; (11) Vessel changes are brought about by these infections which correspond to arteriosclerosis, as described by Josué; (12) Contrary to the general conclusions reached by Thoma, these experiments show that there is definitely a form of arteriosclerosis in which, not a preliminary weakening of the media, but a primary proliferation of the intima, including the musculo-elastic layer, is the prime feature. To what extent this essentially proliferative type is to be encountered in the human aorta and other vessels must be left an open question. Undoubtedly, in the medium-sized arteries, the Moenckeberg type of medial degeneration is common. Undoubtedly also in syphilitic as well as other cases, we encounter in the aorta a secondary and adaptive or compensatory overgrowth of the intima—secondary, that is, to the medial degeneration.

In the discussion which followed Klotz's paper, Dr. Pearce said that experimental lesions were not analogous to the arteriosclerosis of man, though of value in explaining degenerative and regenerative changes in vessels. Clifford Allbutt recognized three main groups of the disease: (1) Those in which high blood-pressures were the primary cause (hyperpiesis); (2) Toxic cases, in which the poisonous agent probably entered the vessel-wall from the outside; and involutionary cases, in which the lesions were essentially degenerative. Adami expressed the opinion that in the commonest form of aortic arteriosclerosis there is (as in the experiments of Josué, Pearce, Klotz, and others working with adrenalin and allied drugs) a primary degeneration and giving way of the media, and that the reaction to that lesion occurs in an overgrowth of the musculo-elastic layers of the intima, which may or may not be accompanied by coincident hyperplasia of the sub-endothelial connective tissue of the intima, as an effect of strain occurring within certain limits.

Stengel[3] discusses some clinical manifestations of arteriosclerosis. He first alludes to cases of pre-senile or senile arteriosclerosis, in which, from time to time, fever of some duration occurred, and in which no local lesion of any kind could be discovered. He records such a case in a man aged seventy-five, with rather pronounced general arteriosclerosis, in no sense broken down in health, who developed a moderate febrile attack, lasting nearly three months. Subsequently he had severe attacks of renewed fever following slight rigors, for which no adequate explanation could be obtained. He records a very similar case in a woman eighty years of age, at first thought to be malarial, but examination of the blood and the failure of quinine negatived this view. He was not able to give any positive information as to the pathological explanation of the rise in temperature. He next refers to cases of sudden and repeated attacks of severe burning pain in the abdomen, accompanied with constipation and abdominal distension, which are apt to prove fatal. Such cases are suggestive of appendicitis, but nothing has been found but a high grade of arteriosclerosis affecting the arteries of the splanchnic area. Max Buch[4] has collected twenty-five of these cases, and distinguishes two groups—cases of pure arteriosclerotic abdominal cramp, and cases occurring as a manifestation of angina pectoris. He points out that the attacks are determined by exertion, emotional disturbance, and horizontal posture. Another type of abdominal pain associated with arteriosclerosis may result from advanced disease and tortuosity of the abdominal aorta. It is apt to be mistaken for cancer. Among intestinal lesions dependent on arteriosclerosis, he refers to the common occurrence of obstinate watery diarrhœa, with general debility and marked prostration. The frequency of intestinal ulceration, referred to by Dickenson, he believes to be mainly related to arterial disease.

In this connection reference may be made to a review by Cheinisse[5] on gastric arteriosclerosis. While admitting that it is sometimes associated with more or less generalized arteriosclerosis, it is by no means always the case. According to the reviewer, the most characteristic feature is the occurrence of paroxysmal pseudo-anginal attacks, associated with severe epigastric or abdominal pain and acute gastric disturbance. Gastrorrhagia sometimes occurs from rupture of a degenerated blood-vessel. Schwyzer considers that there is a sort of parallelism between such attacks and true angina pectoris. While the stomach is empty, the sclerotic vessels suffice for an adequate blood-supply; but during digestion there is a relative ischæmia, to which the stomach responds by energetic painful contractions, representing an intermittent claudication of the stomach.

The study of *Sclerosis of the Coronary Arteries* by Harlow Brooks[6] deserves notice, in order to correct a too general impression that the condition is only of importance in connection with angina pectoris. As a matter of fact, angina only occurs in a certain proportion of cases of coronary disease, whilst the latter may give rise to symptoms and signs which permit its recognition quite apart from angina, and at a stage where treatment may be expected to do much to prevent the later development of angina. The paper is based upon 270 out of 1000 consecutive autopsies in which coronary disease was found in a degree sufficient to affect the nutrition of the heart seriously. Among probable predisposing causes, alcoholic abuse ranked as the most frequent (107 cases); nephritis (35 cases); syphilis (30 cases); excessive smoking of tobacco (9 cases); and obesity (4 cases). Senility *per se* appeared to be responsible in only 16 cases. As to symptoms, the earliest manifestations are more or less arrhythmia, with a sensation of precordial oppression or slight pain on exertion or excitement, frequent variations in the rapidity and force of the pulse, and variability in the intensity of the heart-sounds. Later on, these symptoms are more marked, more frequent, and more readily produced. Complaint is often made of coldness of hands, feet, and other localized areas. Severe pain only occurs in a minority of cases, and cannot be relied on as a measure of the amount of coronary disease. Nevertheless, anginal attacks, when present, are highly characteristic and of serious import. The writer considers that many cases of coronary disease of the milder types are wrongly regarded as functional in origin, and referred to pseudo-angina, and urges that all symptoms of anginal nature—whether moderate or severe—should be referred to coronary disease until this can be confidently excluded.

TREATMENT.—Etiological indications, such as alcoholism, syphilis, obesity, etc., are, says Brooks, of first importance. Moderate regular exercise in open air is desirable; and the diet should be nourishing, but plain and moderate in amount. Elimination by the skin, bowels, and kidneys should be encouraged, and regulated as may be necessary. Medicinally **Iodide of Potassium** is of most value, both in syphilitic cases and others, in doses of 5 to 15 gr. thrice daily. For the relief of pain, vasodilators are often of service, and among these **Chloral** is one of the safest and most efficient, while **Trinitrin** is useful when rapid effects are desired for temporary use.

Herringham[7] refers to treatment as follows: In severe cases the first necessity is **Rest in Bed.** We cannot expect to remove fixed structural changes, but with moderate cases in the earlier stages we can do much by drugs, diet, and regulation of habits. Stress is laid on regular muscular exercise, early rising, and renunciation of tobacco. **Calomel** is most valuable, in small doses every night for a short time, and repeated from time to time. A **Milk Diet** is often beneficial, and in any case moderation in proteid foods is advised. Newton Heineman[8] extols the value of **Nauheim Treatment** in many forms of arteriosclerosis.

Huchard[9] speaks of the early stage of arteriosclerosis under the name of *présclérose*, and emphasizes three points with regard to it: (1) That it does not consist merely of high blood-pressure, but is almost always associated with renal inadequacy: (2) That vasodilator treatment is far from being a cure of the condition; and (3) That the two main lines of treatment should be. regulation of the diet for the purpose of limiting the production of toxic products, and renal elimination as a means of getting rid of them.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* April, 1907; [2]*Brit. Med. Jour.* Dec. 22, 1906; [3]*Ibid.* Oct. 6, 1906; [4]*Progressive Med.* Dec. 1905; [5]*Sem. Méd.* Aug. 14, 1907; [6]*N. Y. Med. Jour.* Oct. 27, 1907; [7]*Brit. Med. Jour.* Jan. 12, 1907; [8]*Med. Rec.* April 27, 1907; [9]*Rev. de Thérap.* Feb. 1907.

ASTHENIA.

(*Vol.* 1888, *p.* 129)—Between the attacks regulate both diet and bowels, and correct nasal obstructions. ℞ Potassii Iodidi, gr. v; Liq. Arsenicalis, ♏iij; Tinct. Stramonii, ♏viiss; Spt. Ammon. Aromat., ♏xx; Aq. Chloroformi, ad ℥j: three times daily. For the attacks the following are recommended: ℞ Potass. Nitrat. ʒss; Pulv. Anisi Tinct., ℥ss; Pulv. Stramonii Foliorum, ℥j; a thimbleful to be burned on a plate, and the fumes inhaled. ℞ Liq. Trinitrini, ♏j, or Sodii Nitrit., gr. ij–v, every 4 hours. ℞ Caffein. Citrat., gr. v–x, every 4 hours. (*Vol.* 1894, *p.* 29)—Paraldehyde, 3 gr., every hour for three doses, is well spoken of.

ASTHMA.

R. W. Philip, M.D., F.R.C.P.

Little of importance has been contributed to the etiology or therapeutics of asthma. Hare[1] discusses its etiology, and argues as previously for the theory of recurrent congestive turgescence of the mucous membrane rather than that of bronchial constriction. He cites in favour of his view the beneficial effect following inhalation of powdered alum mentioned long ago by Salter, and the more recent treatment of asthma by adrenalin, exhibited locally by means of spray.

Riehl[2] gives a detailed account of four cases of asthma, in the expectoration of which spirals of unusual size were found. The spirals were readily visible in the glairy mucous discharge. They were much larger than the ordinary Curschmann's spirals, none of which were found in the expectoration. The bodies consisted of a fine central spiral covered by a mucous mantle. Riehl thinks they are probably formed in the finer bronchi, and thence projected into the larger bronchi, where they are covered by the mucous mantle. Thence they readily pass upwards through the main respiratory passages.

Cohn-Kindborg[3] finds **Hot Air** of much service in asthma, emphysema, and chronic bronchitis. The patient is allowed to sit in a hot-air cabinet at a temperature of 65 to 80° C. for an hour at a time. The cases cited suggest that at least temporary improvement follows.

Goldschmidt[4] re-emphasizes the value of **Morphine** in more severe cases of asthma of prolonged duration. While the risk of establishing the morphine habit must not be forgetten, the immediate advantage counterbalances the risk.

Einhorn[5] discusses the constitution of Tucker's agent, and recommends, as the result of analysis and his own observations, an inhalation fluid of the following constitution:—

℞ Cocaine Nitrite	1·028 per cent	Glycerin	32·16 per cent
Atropine Nitrite	0·581 per cent	Water	66·23 per cent

Siegel[6] dwells on the value of **Respiratory Exercises** in the treatment of asthma. The reviewer's experience is entirely in keeping with this. More particularly, they are of service where deformity of chest architecture exists. This is commoner than seems to be supposed, and warrants a more thorough inspection of the thoracic wall than is usually practised. Such inspection, and the institution of suitable respiratory exercises, are to be recommended, particularly in the case of children and young subjects.

REFERENCES.—[1]*Clin. Jour.* June 26, 1907; [2]*Münch. med. Woch.* Nov. 13, 1906; [3]*Berl. klin. Woch.* Oct. 8, 1906; [4]*Ibid.* July 1, 1907; [5]*Münch. med. Woch.* July 8, 1907; [6]*Wien. klin. Woch.* 1907, No. 4.

BALANITIS.

(*Vol.* 1888, *p.* 133)—While acute, treat with **Nitrate of Silver**, gr. v to x in Water ℥j, used either as a paint or as an injection under the foreskin. Separate the inflamed surfaces by gauze soaked in **Boric Lotion**, or by **Ung. Plumbi Subacetatis.** In chronic cases use a dusting powder of Sulphate of Zinc, with Starch Powder as a vehicle. In such cases a saturated solution of Tannic Acid in Distilled Water may be useful; the Ung. Glyc. Plumbi Subacet. should be applied after bathing.

BEDSORES.

Preventive Treatment: A full-length water-bed is generally necessary, filled at 70° Fahr. Cover this with a full-length macintosh, a smooth sheet; across the middle of the sheet lay a narrow macintosh and a draw-sheet; all must be quite smooth. Downward pressure by bedclothes is to be prevented by a "cradle." All prominent parts are to be washed thrice daily with soap and water. Dry the skin, and rub it over with Glycerin, 1 part; Methylated Spirit, 9 parts; then dust it with Zinc Oxide, 1 part; Boric Acid, 2 parts; and Powdered Starch, 3 parts. When a sore threatens, protect the part from pressure by a ring air-cushion. The skin must not be allowed to become, or rather to remain, wet. *Treatment of Sores:* If slight, apply fomentations of lint soaked in weak **Chlorinated Soda** Solution, every four hours, to the slough, and bathe it with the same solution; when a clean granulating surface is obtained, dress it with **Boric Ointment.** For large gangrenous sores apply **Charcoal Poultices** every two hours; when the slough separates, plug the wound with strips of lint soaked in **Balsam of Peru.**

BENGAL FEVER (Ten Days' Pigmentary).

J. W. W. Stephens, M.D.

R. Cobb[1] describes this fever as prevalent in many parts of India from May to October. The onset is sudden, with nausea and vomiting, intense frontal headache, and a high temperature. The fever lasts eight to ten days. The pigmentation is pathognomic; it is bat-shaped, involving the skin over the malar bones and bridge of the nose. It does not appear until the fever has subsided, and it is months before it has disappeared.

REFERENCE.—[1]*Ind. Med. Gaz.* in *Med. Chron.* Dec. 1906.

BERI-BERI.

J. W. W. Stephens, M.D.

R. T. Hewlett and W. E. De Korté[1] found, in monkeys suffering naturally from a beri-beri-like disease, congestion of the kidneys, with cloudy swelling of the renal epithelium, congestion of the glomerular vessels, and occasional hæmorrhages into the convoluted tubes, with denudation of their lining epithelium. They find similar but more marked changes in the kidneys in cases of human beri-beri. In the urine of beri-beri patients in acute cases they describe: (1) Hyaline and granular casts; (2) Refractive spherical bodies 2 to 3 μ in diameter, having a thick capsule and hyaline contents; (3) cells 20 μ in diameter, with a single nucleus and very refractive granules;

(4) Cells 30 μ in diameter, escapsuled. The authors consider that these cells are peculiar degenerate cells, or possibly protozoa. They suggest that beri-beri is a protozoan disease, and that the urine is the source of infection.

W. Fletcher[2] records the results of an experiment made by him in Kuala Lumpur lunatic asylum with the view of determining the part played by rice in the causation of beri-beri. He defines the following kinds of rice: (1) Uncured rice, the ordinary white rice sold as Rangoon or Siam rice, eaten by all classes except Indians and Malays. This rice is husked and cleaned before being sold to the rice merchants. It is stored unboiled. (2) Cured rice is boiled and dried before being milled. It is brownish in colour, and forms the staple diet of Indians and Ceylonese. (3) Native Malay rice is stored unhusked, and is pounded and winnowed before use. The results of the experiment, when, as far as could be judged, all the conditions were the same, except that one set of patients received one form of rice, the other set the other form, were as follows: (1) Among 120 patients on uncured rice there were forty-three cases of beri-beri (two admitted with the disease) and eighteen deaths. Amongst 123 patients on cured rice there were two cases of beri-beri, and both had the disease on admission. (2) Ten lunatics actually suffering from beri-beri were placed on a diet of cured rice, and all recovered, while of twenty-six patients who were suffering from beri-beri, and who were not put on cured rice, eighteen died. It is very desirable that these experiments should be repeated, if possible, on a much larger scale.

REFERENCES.—[1]*Brit. Med. Jour.* July 27, 1907; [2]*Lancet*, June, 1907.

BILE-DUCTS, DISEASES OF.—(*See also* GALL-BLADDER *and* LIVER.)

Rutherford Morison, F.R.C.S.

John F. Erdmann[1] reports a case of obstruction of the common bile-duct in a girl aged 17, jaundiced for four weeks, who the day before her admission had a severe attack of pain. For two-and-a-half years previously she had had attacks of pain and occasional jaundice. On admission she was delirious, with deeply-jaundiced skin and conjunctiva. Pulse 120 to 126, temperature 103° to 104° F. by mouth. Operation showed a hard nodulated, congested, greatly enlarged liver; the gall-bladder, 8 in. long, 3 in. in diameter at its fundus, and buried in omentum, was gangrenous. A stone was found in the cystic duct, and another mass of stone, 3 in. long and as thick as a thumb, in the common duct. The gall-bladder was excised, and the cystic duct split on into the hepatic and common ducts: these ducts were emptied of stones and foul fluid, with considerable difficulty. The detritus could only be got out of the hepatic ducts by irrigation, which was done through a $\frac{1}{4}$-in. irrigating tube with saline fluid. The liver could be seen to rise and fall as it was full or empty of the irrigating fluid. A tube was sutured into the duct, which was closed round it, and then a deep incision was made into the liver substance of the right lobe for about $2\frac{1}{2}$ in. for extra drainage, bleeding being arrested by gauze pressure. Thirty days after the operation the patient was discharged well.

B. G. A. Moynihan[2] discusses operations upon the lower part of the common bile-duct, and points out the importance of recognizing for surgical purposes a division of the common duct into three parts. The first part, above the pancreas, is that in which gall-stones are usually arrested, and on which operation is comparatively common. The second part—the retroduodenal or pancreatic portion, 1 in. to $1\frac{1}{4}$ in. long—lies behind the duodenum and in contact with the pancreas, either in a groove or in a canal in the head of the gland. The third portion—the transduodenal or pancreatic, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. long—lies in the inner and posterior wall of the duodenum and terminates at the diverticulum of Vater. The two last parts can be approached either from behind by retroduodenal choledochotomy, or from the front through the duodenum by duodenocholedochotomy. For retroduodenal choledochotomy it is necessary to make the duodenum free by division of the peritoneum on its outer side; it is then stripped over to the left, and the stone is removed by incision of the sclerosed pancreas which covers it. Of duodenocholedochotomy there are two varieties. If the duct itself is opened, it is necessary to cut through the duodenal wall anteriorly and posteriorly over the duct. Both openings require sutures. If the ampulla is opened no suture is necessary for the posterior opening.

Howard Lilienthal,[3] after an experience of more than 300 cases, says that the surgery of the biliary passages is still in a decidedly unfinished state. The percentage mortality after the simpler operations is very low; but when jaundice appears as a complication, and surgical interference with the common duct is required, the death-rate is shocking, even in the most skilful hands. In obstructive jaundice, especially of the chronic variety, **Biliary Drainage** is the most essential measure in reducing operative mortality. Even this may be followed by suppression of bile and death; death may also follow sudden relief of liver engorgement, by shock. In secondary cirrhosis following obstruction the danger of secondary hæmorrhage is very great, and this hæmorrhage need not be confined to the immediate operative field. Two forms of hæmorrhage have been observed in common-duct obstruction cases; a recurrent, appearing as a general oozing soon after operation, easily checked by packing and pressure; a secondary, from five days to a fortnight after operation, uniformly fatal. [This is always associated with cirrhosis in the author's experience.] The writer concludes that: (1) The scientific and judicious employment of preliminary drainage in obstructive jaundice will probably lessen the dangers of such steps as may be necessary for permanent cure; (2) That this drainage should form the sole object of the surgeon's work until the factor of cholæmia has been eliminated; (3) That radical operations should, in most chronic cases, be postponed until hepatic engorgement and icterus no longer exist.

REFERENCES.—[1]*Med. Rec.* Sept. 22, 1906; [2]*Brit. Med. Jour.* Nov. 17, 1906; [3]*N.Y. Med. Jour.* May 18, 1907.

BLACKWATER FEVER.—(*See* MALARIA.)

BLADDER, SURGERY OF.

E. Hurry Fenwick, F.R.C.S.

Intraperitoneal Rupture of the Bladder.—Quick[1] reports a successful repair of rupture of the bladder, which is most encouraging. There had been a sudden development of ascites after trauma, also strangury and blood from the urethra, and practically anuria for eleven days. The passage of a catheter drew off 5800 cc. (9½ pints) of blood-tinged urine. Free fluid was present in the abdomen, and some of this disappeared when the catheter was passed. The patient had tried to work for two days after receipt of the injury, and the operation was not done till the eleventh day. He was discharged cured in ten days. No peritonitis was present, although 3¼ pints of urine were evacuated. The operation carried out was suture of the bladder with Czerny-Lembert sutures, and drainage by means of a catheter. It is to be noted that the ragged opening was the size of a thumb in circumference, and it was situated in a part of the bladder easy to and accessible for the suture—superior surface.

The causes of this condition, adds Quick, are falls and blows on the abdomen with a distended bladder, and excessive physical effort caused by heavy lifting. Alcoholism is an important predisposing cause, by causing the bladder to become over-distended by the increased secretion of urine, by dulling the sensibility of the patient so that the distended bladder is not noticed, and by making the individual quarrelsome, so that injury is likely to occur. Seventy-two per cent of the cases quoted by Ashhurst were more or less drunk at the time of the injury. The mortality in the intoxicated is over 43 per cent, and in the sober less than 28 per cent.

Stone.—In a report on two cases of vesical stone in children, Heard,[2] of Simla, states that perineal litholapaxy is preferred to suprapubic lithotomy by surgeons in India, the crushing operation being performed through a median urethral incision.

Littlewood has removed a stone weighing 18 oz. 5 dr. from the bladder by the suprapubic route. This, he considers, is the heaviest stone on record. The patient died of uræmia nine months later.

Tumours.—This subject was discussed at the New York Academy of Medicine, March 21st, 1907, and reported in the *Medical Record*, 30th April, 1907.

PATHOLOGY.—The following classification was adopted by Mandelbaum:—Epithelial tissue group: papilloma, adenoma, carcinoma, cysts; Connective tissue group: fibroma, myxoma, sarcoma: Muscular tissue group: myoma.

The following conclusions are given: Tumours are equally common in males and females. Carcinoma is most common between the ages of fifty and sixty. Sarcoma occurs in younger subjects. Benign tumour is met with at any age. Chronic irritation is apparently an important factor in the etiology. Metastatic tumours are rare. Papillomata are single or multiple; phosphatic deposits may occur on them. Some are so large as to fill the bladder. There is a great tendency for such to recur and to become malignant. These tumours form about 20 per cent of bladder tumours. Carcinoma are most common in males. Ulceration and hæmorrhage are frequent, but perforation of the bladder wall is very rare. The papillary variety is the most common; but flat, squamous celled, and fibro-carcinomata occur. The last variety usually arises in the prostate, and secondarily involves the bladder. Adenocarcinomata also arise in the prostate. Simple adenoma and fibro-adenoma are rare. Cysts occur from congenital defects in connection with the urachus, the Wolffian body, or Gärtner's duct. Connective tissue tumours are not common, but myxoma is not infrequently found in children. Thirty per cent of the cases of sarcoma occur in females. Myxomata are rare. One case only of dermoid cyst is known.

Diagnosis.—Early diagnosis, says Cabot, is important in order to forestall the onset of inflammation and the destruction of the kidney by pressure at the lower end of the ureter. The cardinal symptoms are painless hæmaturia and disturbance of bladder function. The chief diagnostic point between tumour of the bladder and disease of the prostate is the lack of symptoms in the first case. Hæmaturia, although always present at some stage, is not an early symptom, and is usually followed by infection. Two methods of examination are important: (1) By the cystoscope; (2) By the rectum. If bleeding is too profuse to use the cystoscope, diagnosis could be made by suprapubic incision. In all cases of painless hæmaturia, cystoscopic examination as soon as possible is indicated.

Treatment.—Guiteras says the first question to decide is, Should an operation be performed or not? Many patients live in comfort for years with a bladder tumour. Palliative treatment consists in **Rest,** with **Calcium Chloride, Tincture of Iron, Ergot,** and **Gelatine** to stop the hæmorrhage. If blood clots are seriously troublesome they should be removed by **Aspiration.** Tenesmus and spasm are treated with **Anti-spasmodics** and **Stretching the Bladder Sphincter** with a Kohlmans' dilator. Infection is treated by careful washing of the bladder.

Operative removal could be performed: (1) Through the dilated urethra (females); (2) Vagino-vesical incision; (3) By perineal cystotomy; (4) By means of the operating cystoscope; (5) By suprapubic cystotomy; (6) By cystectomy, partial or complete. More attention should be paid to the use of the operating cyotoscope. Excision, if possible, is the best operation.

Sedgwick Watson, of Boston, who is so well known as a progressive urologist as well as a brilliant surgeon, advocates a line of treatment for inoperative bladder tumours which is probably destined in the next decade or so to be accepted as rational and valuable. An extraordinary number of benign growths recurring could be removed by biting off, but he advises against touching malignant growths in this way. For them he advises a preliminary double simultaneous nephrostomy, and then, after a month or six weeks, **Removal of the Bladder, Prostate,**

and Seminal Vesicles. No operation is of any value in sarcomata. (For further details compare BILATERAL NEPHROSTOMY, *infra*).

Vesical Tuberculosis.—George Walker, of Baltimore, in the course of an article on vesical tuberculosis,[3] makes the following statements:

ETIOLOGY.—Tuberculosis of the kidney, with tubercle in the urine, may be present for years without the bladder being infected. Tuberculosis of lung and bone are important etiological factors. Injection of tubercle bacilli into the injured or uninjured bladder is rarely followed by tuberculosis. Gonorrhœal cystitis probably favours tuberculous infection, and the two conditions may co-exist. Infection by coitus is possible, but rare. Infection by the blood or lymph-stream is rare, the extension from the kidney either occurring along the mucous membrane of the ureter, or by the tubercle entering from the urine through some microscopic fissure. Males are more frequently affected than females. It occurs at all ages, the youngest patient on record being two years old.

PATHOLOGY.—The bladder is almost never the seat of primary tuberculosis, and the disease rarely ascends to the kidney. The disease starts in the lower half of the bladder round the orifices of the ureters or in the trigone, and the deposit is sub-epithelial. Miliary tubercles are first formed, and these coalesce, necrose, and slough, forming a large ulcerated area. Grey and miliary tubercles are seen scattered round the ulcers. In some cases the granulations are so large as to resemble papillomatous growths. The muscular coat is gradually infiltrated, the bladder becomes unable to empty itself, and in some cases nearly all the mucous membrane of the bladder is lost. The walls of the bladder in these later stages may be very much thickened, and the whole organ is much reduced in size. In acute cases there may be a fibrinous exudate resembling that seen in diphtheria, and which, when removed, leaves a bleeding surface. The bladder may be so completely destroyed that it is difficult to find any trace of it (*sic*). Mixed infection may occur, with or without instrumentation, but the commonest method of invasion by septic organisms is by catheterization.

Perforation is rare, and is usually at the base. Phosphatic deposits may occur, and stone may complicate the condition. In 411 cases out of 447 the involvement of other genito-urinary organs was specifically stated to exist. Infection of the bladder is most frequent from the kidneys and the epididymis.

DIAGNOSIS.—The symptoms generally met with are painful and frequent micturition, a dull aching sensation in the pelvis, and the presence of pus, tubercle bacilli, and blood in the urine. Direct inspection only can justify an absolute diagnosis. Pain and frequency of micturition are found in 90 per cent of the cases, but they may be intermittent; as the disease progresses they become constant. The frequency is diurnal and nocturnal, and is not increased by exercise or diminished by rest. Pain is usually absent at first, but later may be very severe. The reaction of the urine is usually acid. Hæmaturia may be so profuse as to endanger life, but this is not common. It is due to congestion of the bladder, or to ulceration directly opening blood-vessels. Tubercle bacilli can always be found by careful search ; other bacilli found are the colon bacilli, streptococcus, staphylococcus, and members of the proteus group. The diagnosis rests on cystoscopic examination. Either retention or incontinence of urine may occur. The usual complications are a secondary infection, stone, stricture, and prostatic abscess. Fistulæ into the bowel may occur.

Tuberculosis of the kidney may closely simulate the symptoms of bladder tuberculosis, the only positive differentiation being by cystoscopic examination. Tuberculosis of the prostate may often be differentiated by rectal examination. In simple ulcer of the bladder there are no tubercle bacilli in the urine, and this also holds in diagnosing other ulceration due to the various forms of cystitis. Stone simulates the condition closely, but the frequency is less evident at night, and is increased by exercise and diminished by rest. The cystoscope will at once decide.

PROGNOSIS.—A very few cases heal, a few run a chronic course extending over years, but in the majority the progress is rapidly downhill. The average duration of life is thirty-five months.

TREATMENT.—The main treatment to be relied upon is general **Hygiene.** Drugs do little good, and surgical interference often much harm. The **Opsonic** method of treatment promises something. A **Suprapubic Cystostomy** will give relief in the later stages. The results of excision of the tuberculous focus are discouraging. **Removal of the Primary Focus** by nephrectomy, prostatectomy, or orchidectomy, is of benefit, and in some cases of great benefit. Instillations of **Bichloride of Mercury, Iodoform,** and **Guaiacol** are of benefit in some cases, but in the majority bichloride of mercury does harm. Guaiacol and iodoform are harmless. To sum up the treatment: "Remove when possible the primary focus of the bladder infection, and send the patient to a suitable climate, where he can live out of doors and where he will receive the proper quantities of well-selected food. Surgical and medical treatment other than this play a pitiful rôle."

Bilateral Nephrostomy in Inoperative Tumours of the Bladder.—F. S. Watson,[4] of Boston, after criticising the high mortality and the frequent recurrence in the operative treatment of vesical tumours, advocates preliminary nephrostomy on both sides in order to divert the urine. He has a special loin urinal, which catches the urine and works well. He considers a nephrostomy much more valuable than implantation of the ureters into the colon. In certain favourable cases he suggests as a further measure a total removal of the bladder with its contained tumours. The article is worth careful perusal, and the method bids fair to be accepted as a bona fide new surgical effort to give relief in a most distressing class of incurable suffering.

REFERENCES.—[1]*Ann. Surg.* Jan. 1907 ; [2]*Brit. Med. Jour.* July 13, 1907 ; [3]*Ann. Surg.* Mar. and April, 1907 ; [4]*Ibid.* Dec. 1905.

BLOOD, EXAMINATION OF. (*See also* ANÆMIA, HÆMOPHILIA, ETC.)

J. G. Emanuel, B.Sc., M.D.

Improved Method for the Recognition of Blood Stains.—In tropical climates blood stains are liable to putrefy rapidly, or to become so insoluble that they are acted on with difficulty by ordinary reagents. Hankin[1] has devised a means for overcoming this difficulty. The stain is plunged in boiling water for a few minutes, placed on a slide, and wetted with ammonium sulphide; with the micro-spectroscope the two absorption-bands of hæmochromagen are then usually seen, but should they not be visible, a drop of a solution of potassium cyanide will bring out two similar bands situated a little nearer the red end of the spectroscope.

A New Fluid for the Hæmocytometer.—The diluting fluids at present used for the hæmocytometer are isotonic with normal blood, and it is owing to this fact that the red cells remain intact; but in cases of severe anæmia, in which it is so important to obtain accurate counts, the specific gravity of the blood is far below normal, and ordinary diluting fluids are by no means adapted for such cases. Edington,[2] taking advantage of the well-known power of neutral citrate of potassium in preserving the shape and characters of red corpuscles, has prepared the following solution, which is a suitable diluent for both normal and pathological bloods, and, moreover, has the advantage of giving a clear and easily counted field, and allows the ready cleaning of the hæmocytometer :—

R	Neutr. Cit. of Sod.	7·5 grams	Chloroform	5 min.
	Formalin (40 per cent)	2·0 cc.	Distilled Water	250 cc.
	Dahlia (Grubler's)	0·3 gram		

The Estimation of Calcium Salts in the Blood.—Blair Bell[3] has devised a comparatively simple method, which he describes in detail. It consists in counting the number of crystals of oxalate of calcium formed when a definite amount of blood is treated with a definite amount of oxalic acid. The amount of blood used is no more than is required to do an ordinary blood count, and the crystals are counted on a Thoma-Zeiss slide under the microscope.

By this method he has already made important observations with regard to the influence of calcium salts on uterine functions; and should this method prove as reliable as he anticipates, a fresh field for research will be opened up, which should prove of the greatest value.

Measurement of the Coagulation Time of the Blood.—Hinman and Sladen,[4] after experimenting with various methods, found that a simple modification of Milian's method was sufficiently accurate, and in this respect compared favourably with other methods. The inaccuracy of Milian's original slide method they found to be due to the variation in the size of the drop, and by adopting the simple expedient of measuring its diameter by placing the slide on a millimetre scale they were able to confine their observations to drops measuring between 3 and 6 mm. They found the coagulation time of normal blood to be between five and eight minutes, reckoning from the first appearance of each globule at the ear to the moment when no alteration of its contour followed the tilting of the slide. The following are some of the times obtained in pathological conditions: Catarrhal jaundice, six minutes, normal; jaundice, due to cholelithiasis, eight minutes, slight delay; jaundice, due to malignant disease, thirteen and a half minutes, delayed; primary anæmia, normal, also normal in most cases of pernicious anæmia, but in one case delayed; in two cases of severe secondary anæmia, fourteen minutes; typhoid thrombosis, average five and a half minutes.

In calcium therapy their results showed that the first effect of moderate doses of the lactate (which is preferable to the chloride for several reasons) is to increase the coagulability, but this effect passes off in three or four days, though it may be maintained a little longer by increasing the dose; if the drug is continued the coagulation time becomes delayed, but if it is then stopped for a few days it may be resumed, with the effect of again increasing the coagulability. Citrates were found to diminish the coagulability, and when combined with calcium salts acted as a check on the latter.

Iodophilia.—If a dried film of normal blood be treated with a weak solution of iodine, the stroma of the red cells and the protoplasm of the leucocytes stain a pale lemon tint, but in numerous pathological conditions the protoplasm of the leucocytes, especially those of the neutrophile type, stains a variable shade of brown. The nature of this reaction is still disputed, but it is generally believed that the staining substance is glycogen. Da Costa, Junr.,[5] after testing the reaction in a hundred cases of disease, concludes that it is not only a test that is of interest to the pathologist, but may also be of use to the clinician. The technique is sufficiently simple to commend itself to the investigator: The reagent consists of iodine 1, potassium iodide 5, and distilled water 100 parts, to which 50 parts of gum arabic are added to give the mixture a syrupy consistence. The dry film is simply mounted with a drop of this reagent, and examined after five minutes under an oil immersion lens. The diseases which Da Costa investigated included enteric fever, sepsis and abscess, tuberculosis, gonorrhœal arthritis, rheumatism, diabetes mellitus, primary anæmia, and many others, for details of which the reader must consult the original paper. He summarizes his conclusions as follows:—

"1. In the dry blood-film intracellular iodophilia indicates a form of leucocyte degeneration of toxic origin, due presumably to an abnormal affinity of the cell glycogen for iodine. The same reaction in the fresh wet blood-film is physiological. Extracellular iodine-stained masses in the plasma have no definite pathological significance, so far as can be determined.

"2. The toxic factor of the reaction may be absolute and frankly demonstrable, as in pyogenic septicæmia and in pneumonia; or it may be indefinite and masked, as in pernicious anæmia and in cachectic states.

"3. The reaction is restricted to the cytoplasm of the leucocytes, never affecting their nuclear structure. In fully 98 per cent of all reactions the polynuclear neutrophiles are implicated ; in about 20 per cent other cells, notably the lymphocytes, and less commonly the myelocytes, also react ; in the exceptional instance, iodophilous eosinophiles are noted. Diffuse and diffusely granular brown staining are the prevailing microchemical changes, pure granular stippling being exceedingly rare.

"4. The number of iodine-stained cells corresponds roughly to the colour intensity of the reaction, 50 per cent or higher of iodophiles being generally found in a decided, and approximately 25 per cent in a feeble, reaction.

"5. Iodophilia has no direct relation to leucocytosis, to anæmia, or to pyrexia. (*a*) Its relative frequency in patients with high leucocyte figures is due to the fact that such cases are generally toxic ; a similar toxæmia with leucopenia excites just as intense a reaction. (*b*) The grade of anæmia in no wise corresponds to the incidence or to the intensity of the reaction. (*c*) Fever *per se* has absolutely no effect in causing iodophilia, afebrile cases and those with hyperpyrexia showing an equal percentage of positive results.

"6. From a clinical view-point, iodophilia is often a helpful, though under no circumstance a diagnostic sign, and to be of real service to the clinician it should be correlated with every other detail of the clinical picture. Thus interpreted, a positive reaction in a person obviously ill means that the systemic effect of the illness, whatever it may be, is vigorously exerted in so far as its harmfulness to the patient in question is concerned : in this connection the sign is useful in the study of such diseases as enteric fever, pneumonia, diphtheria, general sepsis, and many of the severe cachexias. Especially is iodophilia significant when associated with a leucopenia symptomatic of overwhelming prostration of the individual ; iodophilia plus leucocytosis indicates simply an intense infection with an adequate systemic counter-action.

"In the differentiation of various specific clinical entities one must be extremely cautious in accepting iodophilia as a criterion. Personally, I have found the test corroborative in differentiating both gonorrhœal arthritis and osteomyelitis from rheumatic fever ; pure tuberculosis from tuberculosis with secondary pyogenic invasion ; ovarian abscess from ovarian cyst ; and amyloid liver from fatty cirrhotic liver. In distinguishing purulent from non-purulent lesions, it must be recalled that the former always give a positive reaction, unless the abscess is so effectually walled off that toxins cannot reach the circulation ; and that the latter give a negative reaction, unless there happens to be some other source of toxæmia at work. These possible sources of error are extremely exceptional, but it cannot be denied that they must be heeded in an occasional instance."

Sudanophile Leucocytes in the Blood.—The presence and significance of leucocytes containing granules that stain with Sudan III in the blood has recently been emphasized by Cesaris-Demel. D. Buttino and

G. Quarelli[6] have stained the blood of seventy patients with a 0·2 per cent solution of Sudan III in absolute alcohol, and a 0·1 per cent solution of brilliant cresyl-blue in the same medium; the method is that advised by Cesaris-Demel, and it brings out any globules of fat that may be present in the leucocytes. The patients were suffering from a great variety of diseases; in eight cases of purulent meningitis the percentage of sudanophile leucocytes was high (from 50 to 70 per cent); in four cases of tuberculous meningitis it was low (16 per cent or under). In general, the percentage of sudanophiles is much increased in all suppurating affections and in pneumonia. The authors think that in many cases the fatty sudanophile granules in the leucocytes are products of degeneration formed in those cells, and that often they represent fatty degenerated tissue englobed and in process of removal by healthy leucocytes.

REFERENCES.—[1]*Brit. Med. Jour.* Nov. 10, 1906; [2]*Lancet*, July 18, 1907; [3]*Brit. Med. Jour.* April 20, 1907; [4]*Johns Hop. Hosp. Bull.* July, 1907; [5]*Ther. Gaz.* Oct. 16, 1906; [6]*Rif. Crit. di Clin. Med.* Florence, 1907, pp. 321 and 337, in *Brit. Med. Jour.* Aug. 24, 1907.

BLOOD, THE (in Relation to Skin Diseases).

E. Graham Little, M.D., F.R.C.P.

Houston and Rankin[1] record some results of treatment, which was guided by the estimation of opsonic indices, in acne, lupus vulgaris, and lupus erythematosus. In lupus vulgaris these authors confirm the opinion of Bulloch and others that cases with a persistently low index to tubercle will not do well with Finsen light or any other treatment; but that if the **Opsonic Power** is raised, by inoculation or otherwise, improvement at once results. In lupus erythematosus with a low index the combined treatment with tuberculin injections and Finsen light is recommended. In cases with diminished coagulability of the blood, in which œdematous and eczematous affections are common, the administration of calcium salts is very frequently successful.

REFERENCE.—[1]*Brit. Med. Jour.* Oct. 6, 1906.

BLOOD-VESSELS, SURGERY OF. *Priestley Leech, M.D., F.R.C.S.*

Aneurysm.—Berry[1] successfully operated on a rare and interesting case of arteriovenous aneurysm of the neck in a woman aged 39. It occupied most of the anterior triangle and some of the posterior. It involved a careful dissection of the neck lasting two and a half hours. The aneurysm was composed practically of all the deep and most of the superficial veins of the right side of the neck, with the exception of the internal jugular vein. The resemblance between this and the so-called cirsoid aneurysm of the scalp and face raises the interesting question whether these latter tumours really consist of dilated and tortuous arteries as is commonly supposed.

Archibald Young[2] reports the progress of two cases of arteriovenous aneurysm of the neck caused by gunshot wounds. Both were reported before by Makins, one being a case of aneurysmal varix and the other of varicose aneurysm. Both improved a great deal, the murmurs being absent; one was fit for work. Young says that the non-adoption of active surgical interference may be advised in such lesions with all confidence, and with every hope of the patient attaining, by means of natural or spontaneous cure alone, to a very real and substantial degree of comfort and usefulness. In the case of the neck vessels, proximal ligation of the artery alone would seem to be the treatment affording the best chance of success

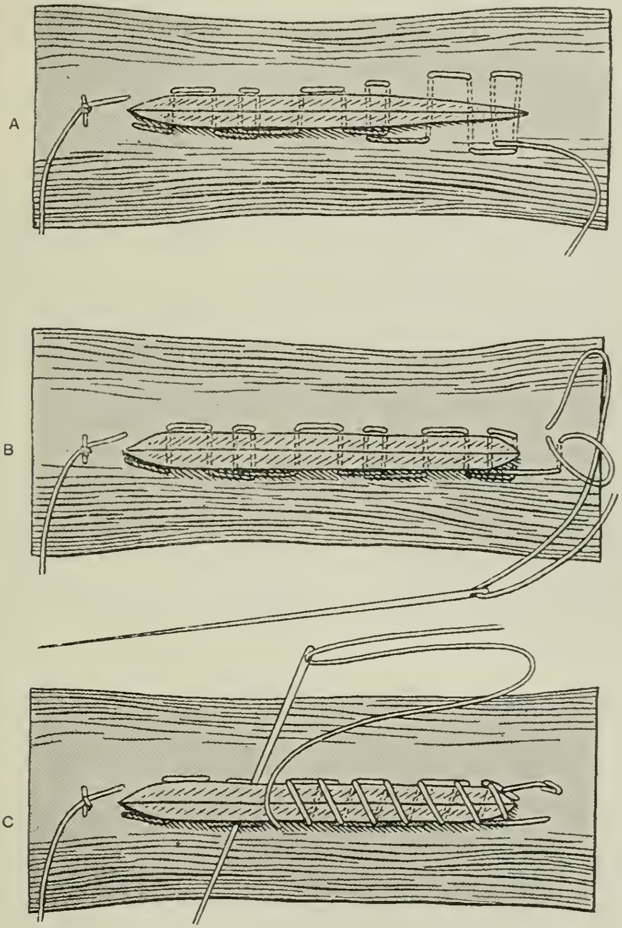

Fig. 27.—A, suture inserted and pulled tight in the lower half; B, suture inserted and pulled tight throughout; half-hitch made but not tightened; C, mattress suture pulled tight and half-hitch made, whipstitch partially inserted but not pulled tight.

with the smallest risk; simultaneous ligature of the vein would imply considerable risk of cerebral trouble.

Suture of Arteries.—Dorrance,[3] of Philadelphia, has experimented with a new arterial suture which he thinks has none of the disadvantages of others. The advantages he claims are: (1) The suture does not intrude into the lumen of the artery; (2) Fibrin ferment cannot get from the ends of cut surfaces of the artery into the bloodstream; (3) The liability to secondary hæmorrhage is lessened by the double line of suture.

The suture can be used for a longitudinal, an oblique, or a transverse (complete or incomplete) cut in the artery. The description and illustrations (*Figs.* 27–30) will make the suture quite comprehensible. Clamps are applied 2·5 cm. above and below the cut. Special clamps are employed, and Pagenstecker's thread No. 1 is used in the finest sewing-needle the thread will pass through. [Carrel advises against the use of clamps; *vide* SUTURE OF VEINS, *infra*.—ED.] The suture is started 1·5 mm. above the cut edge, passed through the outer two coats and tied, and the end grasped by a hæmostat; the needle is next passed through all the coats of the artery on both sides 1·5 mm. below the first suture and 1·5 mm. from the cut edge. The suture from now on is a continuous mattress, with the dropping back one half a suture length every third suture until the end of the incision is reached; then the suture is passed through the outer two coats 1·5 mm below the lower end of the cut and tied with a half-hitch. The

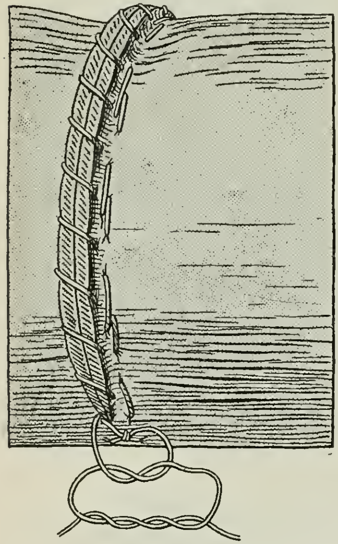

Fig. 28.—Suture of incomplete transverse wound.

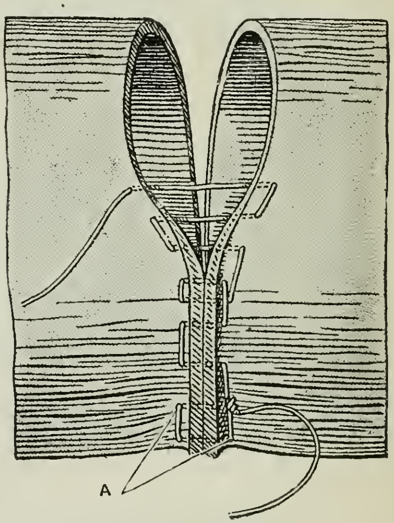

Fig. 29.—Suture of complete transverse wound; A, mattress suture.

same suture is continued as a whipstitch over the edges of the artery outside the mattress suture until the starting-point is reached, when the two ends are tied. The artery is seized in a gauze pad, the distant and then the proximal clamp are removed, the artery is dropped back into its place, and the deep fascia sutured around the line of approximation.

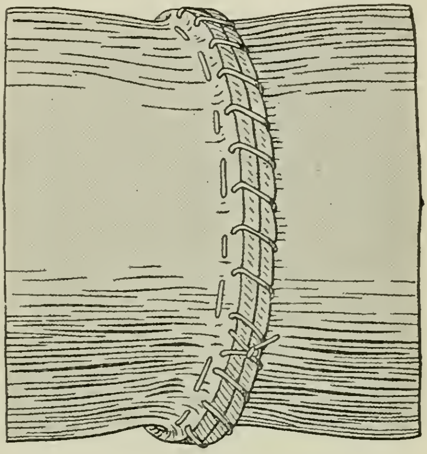

Fig. 30.—Suture of complete transverse wound, finished.

Arteriovenous Anastomosis.—During the year two cases of anastomosis of the femoral artery into the femoral vein have been noted. The first was reported by Hubbard,[4] of Boston, U.S.A., in a man eighty years old, with gangrene of the middle toe of the right foot. The patient recovered from the operation, but the gangrene slowly spread, and a line of demarcation formed in the middle of the foot. The operation was considered successful, but the leg was amputated at the seat of election, and both anterior and posterior tibial arteries spouted. The patient recovered. In this case the upper end of the divided femoral artery was united to the lower end of the divided femoral vein, with invagination of the artery into the vein.

The second case was reported by Howard Lilienthal, of New York;[5] the patient was twenty years old, suffering from ulcers on the foot due to arteriosclerosis. The condition became worse, and it was decided to try to anastomose the popliteal artery and vein, but on incision it was found that the artery was absolutely obliterated. Four days later an incision to expose the femoral vessels in Scarpa's triangle was made, when it was found that only the upper part of the femoral artery pulsated, and the upper part of this was united to the vein. He had to use No. 12 needles, as No. 16, recommended by G. Carrel (*vide* SUTURE OF VEINS, *infra*), are very difficult to thread. The needles were sterilized in the usual way, and the thread was placed in vaselin *dry*, and then sterilized in the vaselin. A needle-holder cannot be used in this operation, and when operating on thick-walled vessels a thimble is needed. It is necessary to sever the artery some distance below, and the vein some distance above, so as to avoid tension at the point of anastomosis. Death occurred thirty-one hours after the operation. No post-mortem was allowed except to remove the artery and vein; the anastomosis showed a smooth union, with an extremely soft clot in the vein, possibly formed just before death, when the circulation was at its lowest ebb

Suture of Veins.—Professor Lejars[6] reviews the application of sutures to the wounds of veins. With the exception of wounds of the portal vein and the portion of the inferior cava above the renal vein, ligature of any of the venous trunks is quite a legitimate operation, and in practice this is the most usual and most easily applied treatment of wounds of the vein. It must be remembered that unless asepsis is perfect after suturing. the lumen of the vein will not be preserved, and the non-success of the early cases of venous suture was entirely due to infection. At the present day there have been reported several successful cases of suture of venous trunks. Out of six of the inferior vena cava there have been four successes and two deaths. Jacobsthal[7] has collected fifty-three cases of suture of the large veins. In two of these only did lateral suture fail, necessitating secondary ligature. It is thus well established that lateral suture is applicable to all the large venous trunks, even the subdural ones, and if asepsis is assured and the technique is correct it gives good results.

The circular suturing of the two ends of a venous trunk after resection has not been so satisfactory. One successful case is reported by Kümmel.[8] In cases where lateral ligature (partial) of a vein can be done, suturing can in most cases replace it, and the chances of secondary hæmorrhage are probably less with suture than with lateral ligature. In contused and lacerated wounds of the veins, suture should not be attempted, nor in infected wounds or those due to secondary ulceration ; in these cases ligature of the vein is to be preferred. Where the wound in the vein is transverse, and longer than half the circumference, suture should not be attempted, as the calibre of the vein would be narrowed too much. If the result of suturing appears at all doubtful, it is better to tie. As for end-to-end suture of veins after resection, there are not sufficient cases recorded to enable any indications for its use to be formulated. As regards technique, forceps covered with indiarubber must be applied to the vein on either side to prevent hæmorrhage from the venous wound, care being taken that too great pressure is not applied ; the same result can be obtained by passing a loop of silk or catgut under the vein and letting an assistant pull on it to stop the circulation in the vein ; or the loop may be temporarily tied over a small piece of gauze or piece of drainage tubing ; collateral veins may open into the main vein between the two ligatures, and these may also require to be temporarily occluded. In suturing the vein, its calibre may be reduced to half its diameter without danger. Round needles are to be preferred, and it is useless to attempt a Lembert's suture, as the venous walls are too thin : through-and-through sutures are much better. Silk of No. 00 size or linen thread may be used, and the needle must be introduced perpendicularly to the venous walls ; a continuous suture tied every two or three stitches, and commenced and carried outside the two extremities of the wound, is the best. Three loops passed through the walls of the vein equidistant from each other when pulled on assist the stitching in the cases of long wounds.

Further information of experimental surgery of blood-vessels and organs is given in a most interesting paper by Alexis Carrel.[9] The article is too long to abstract, but its practical applications for the suturing of blood-vessels in human surgery may be summed up as follows :

Failure in vascular surgery is mainly due to the formation of a thrombus : this may be caused by inflammation of the endothelium ; by a wound, even such as a slight crushing, of the endothelium ; by a lack of continuity of the internal layers of the vessels ; or by the presence of foreign tissues or juices in the lumen of the vessel. Each detail of the technique has been developed and adopted with the view of eliminating these sources of complication. A rigid **Asepsis** is absolutely essential for success, and in order to obtain constant good results in blood-vessel surgery the *degree of asepsis must be higher than in general surgery.*

The dissection of the vessel is not dangerous if the wall is not crushed or roughly handled with hard instruments. Even the veins may be closely dissected and freely handled with the fingers without injury, provided the wall be not hurt by a sharp instrument.

When temporary hæmostasis is obtained by means of forceps or clamps, the endothelium is often wounded, and coagulation occurs at the injured point ; the clamps should be smooth-jawed and not too strong in the spring. Carrel now stops the circulation by a narrow linen strip, which is placed round the vessel and then drawn tight and fixed by a serre-fine. After section of the vessel the external sheath is resected and removed from the edges of the lumen. If it gets between the edges of the vessel—which is very liable to happen—and comes in contact with the blood, it very quickly leads to the formation of a thrombus. The lumen of the vessel is next carefully washed with isotonic sodium chloride solution (0·9 per cent), and as a rule coated with vaselin. The vessel can be handled with very delicate forceps if care is taken to grasp only the extreme edge of the wall. In large arteries it is possible to make the suture by interstitial stitches without injuring the endothelium, but it is impossible on veins and on medium-sized and small arteries. As a rule, perforating stitches are used, and these wounds must be rendered as harmless as possible. Very sharp round needles (No. 15 or 16) are used. The threads are sterilized in vaselin, and are kept heavily coated with it while suturing. The vaselin is rubbed off in the holes, and prevents the wounded tissues and the blood from coming into actual contact. Great care must be taken not to include fragments of the connective tissue layer in the line of suturing, and to obtain a smooth union and approximation of the endothelial coats.

REFERENCES.—[1]*Lancet*, Dec. 22, 1907 ; [2]*Glasg. Med. Jour.* Nov. 1907 ; [3]*Ann. Surg.* Sept. 1906 ; [4]*Ibid.* Oct. 1906 ; [5]*Ibid.* Jan. 1907 ; [6]*Rev. de Thérap.* Oct. 15, 1906 ; [7]*Sammlung klin. Vorträge Chir.* 1905, No. 109 ; [8]*Beit. z. klin. Chir.* 1900, Bd. xxvi. p. 128 ; [9]*Johns Hop. Hosp. Bull.* Jan. 1907.

BOILS.

(*Vol.* 1899, *p.* 69)—**Thiol** is recommended as a paint. (*Vol.* 1905, *p.* 284)—Another paint used successfully is Tincture of **Iodine** ʒj with **Acetone** ʒvj. (*Vol.* 1902, *p.* 290)—Russlow gives **Flowers of Sulphur** internally, beginning with ½ to 1 teaspoonful every morning, and increasing the dose if needful. (*Vol.* 1894, *p.* 123)—Compresses soaked in **Chloral Solution** are highly praised. The formula is Chloral Hydrat., ʒiv; Aquam et Glycerinum, āā ℥j. (*Vol.* 1905, *p.* 79)—Wright's **Staphylococcic Vaccine** is being used.

BONES, SARCOMATA OF.

Priestley Leech, M.D., F.R.C.S.

Rawling[1] reports a case of inoperable sarcoma of the scapula in a child four years old, and has collected statistics of twenty-three cases of sarcomata of bones in young children. He also quotes Ost's and Manderli's cases, which with his own make fifty-nine cases of bone sarcomata in young children, of whom forty died at an early date. He concludes that surgical procedures are generally useless unless the case be diagnosed and operated on at an early date, the removal being so planned that the tumour is freely and widely extirpated.

Morton[2] reports a case of periosteal sarcoma of the fibula in which he excised the upper half of the bone. The case did well, but eight months after the operation there was recurrence, which was excised, and another recurrence six months later, which was removed by operation; and now, two years after the removal of the growth, the patient is free from recurrence, Coley's fluid having been tried. He favours excision of these growths and subsequent treatment by Coley's fluid to prevent recurrence.

W. B. Coley,[3] of New York, deals with the diagnosis, treatment, and prognosis of sarcoma of the long bones, with a report of sixty-nine cases. The result of surgical procedures in sarcoma of the bones has been notoriously hopeless, and all statistics show that the prognosis is decidedly worse in periosteal growths than in those of central origin.

Of fifty-seven cases of cures of sarcoma of the long bones, thirty were of the myelogenous type, fifteen periosteal, in the remainder the exact nature of the growth is not stated.

The nature of the operations performed in these cases of cure is of great interest: 21 were treated by amputation, 10 by ex-articulation, 17 by resection, 5 by curetting. In 4 the nature of the operation is not stated. One cannot help being struck by the large number of cases (nearly one-third) cured by resection. Out of Coley's series the distribution among the various long bones was as follows: Femur, 36; humerus, 13; tibia, 13; fibula, 2; radius, 3; ulna, 2; metatarsal bone, 1; metacarpal bone 1; total 71: 34 periosteal; 22 central; 15 type not stated. Method of treatment: Amputation, 20; disarticulation, 16; conservative methods (resection), 6; no operation, 29. He has changed his opinion somewhat as regards treatment, and in view of the results obtained by Von Mikulicz and other—principally German—surgeons, he is inclined to think that resection should be employed in a much larger number of cases of sarcoma of the long bones, particularly of the myeloid type in the radius and tibia; he also believes that the use of the mixed toxins of erysipelas and *Bacillus prodigiosus* after operation will greatly widen the limits within which the operation of resection may be safely employed.

Etiology.—Trauma has some intimate connection with the etiology of sarcoma. Out of 615 cases personally observed there has been a history of injury in upwards of one-third of the cases. In sarcoma of long bones the history of trauma is even more frequent than in sarcoma of the soft parts.

Diagnosis.—The condition that most closely resembles sarcoma of the bone is tuberculosis: its similarity is so great that the most expert diagnosticians have failed to differentiate the two conditions, and as there are certain risks connected with exploratory incisions it is most important to be able to make a diagnosis if possible without such aid. The following points will help to exclude tuberculosis: Age ten to fifty, majority twenty to forty; general health perfect; no family or personal history of tubercle; in one-third of cases history of local injury of some sort, usually less than six months prior to the first appearance of the tumour. The first symptom noticed as a rule is local pain or swelling, in about equal proportions of the cases. In upwards of two-thirds of cases of sarcoma of long bones the tumour will be found located in one end of the bone: the lower end in the femur, the upper in the tibia and humerus, probably starting in the epiphysis, but very rarely invading the joint except in the later stages. In nearly all cases growth is much more rapid than in either tuberculous or syphilitic swellings. In tuberculosis there is early invasion of the joint, more limitation of joint movement, and more atrophy of the muscles of the limb above. Seen in the later stages, when the whole joint is affected by the disease and the patient has become emaciated and exhausted, the similarity of sarcoma to tuberculosis is very great. The consistence of the growths varies. There may be a rise of temperature, more especially on the very rapidly growing sarcomas. The involvement of the joint is a very important point in diagnosis, except in the rare case of sarcoma of the synovial membrane. In the early stages the X rays are of very little assistance, and may be misleading; in the periosteal and central growths they may be of use.

The differential diagnosis of syphilitic lesions is not nearly so difficult; usually there is evidence of specific disease elsewhere in the body; the growth is slower, and the location of the tumour in the shaft of the bone rather than the extremity will be sufficient to establish the diagnosis.

In rare cases osteo-arthritis may be difficult to distinguish from sarcoma. In some cases—perhaps a considerable number—it may be important to establish the diagnosis before the clinical signs are sufficiently marked to render this possible. A portion of the tumour may be removed by means of a punch or an exploratory incision, preferably the latter; there is some possibility of infected cells getting into the circulation, but it must be risked.

Coley believes it is impossible in many cases to make a differential diagnosis between sarcoma and cyst of the long bones without a careful microscopical examination. Cysts of the long bones are rare: D'Arces, in 1906, having been able to collect from literature but thirty-one cases. Nearly one-half have been found in the upper end of the femur, a relatively frequent seat for sarcoma; six occurred in the upper end of the tibia, and six in the upper end of the humerus. Cysts as a rule are of much longer duration than sarcoma of the bones, and a history of trauma and spontaneous fracture is found in both with equal frequency. Some authorities believe that practically all cysts in the long bones are sarcomata. The final results are that ten patients have remained well over three years. One with sarcoma of the femur was well five years after hip-joint amputation; one of the femur, well after five years, no operation (diagnosis probably erroneous); one a subperiosteal round-celled sarcoma of the femur with metastases, well after five years, treated with toxins, without operation; one of tibia, well eight years after treatment with mixed toxins; one of the tibia, well ten years after amputation of the thigh; one of tibia, five years and a half after, and then developed metastases in the lungs; one of the tibia well two years after, recurrence twice after conservative operation—the tumour disappeared under the toxins and X rays, patient well at present; one of humerus, well four years after resection, followed by the mixed toxins; one of the radius, well six years after resection; one of the ulna, well eight years, then developed extensive abdominal metastases; one of metatarsal bone, well five years, amputation of leg, middle and lower third, mixed toxins after operation, four months.

He recommends the injection of the mixed toxins of erysipelas and *Bacillus prodigiosus*; he has not yet dared to treat periosteal sarcoma of femur except by amputation. The paper has a good bibliography, but the results of surgical interference are sad reading.

REFERENCES.—[1]*Lancet*, Feb. 6, 1907; [2]*Bris. Med.-Chir. Jour.* Dec. 1906; [3]*Ann. Surg.* Mar. 1907.

BRACHIAL PLEXUS, PRESSURE ON. *Priestley Leech, M.D., F.R.C.S.*

Some few cases of pressure on nerves of the brachial plexus and on the subclavian artery by cervical ribs have been published, but not much attention has been given to them. Thomas and Cushing[1] reported one case, and Thorburn[2] four in which there were definite signs of pressure on the plexus. In Thomas's case and in two of Thorburn's the symptoms were particularly well marked, consisting essentially in paralysis of the intrinsic muscles of the hand, with pain and some sensory loss about the region of distribution of the first dorsal root. In these three cases the offending rib was removed, with relief of the pain, and in Thorburn's case re-establishment of the functions of the paralyzed muscles. Tillman reported a case operated on by Bardleben,[3] two others were operated on in Von Bergmann's clinic and three in Hoffa's. Russell,[4] of Montreal, says these are the only cases he has been able to find of pressure on the plexus. More or less complete occlusion of the subclavian artery on the other hand appears to be common. Tillman, in his review of the subject, collected twenty-six cases, in thirteen of which the presence of the rib caused symptoms; in the other thirteen it was found accidentally. In ten of these cases the symptoms disappeared under symptomatic treatment: three only were operated on, and all successfully. Babcock,[5] of Philadelphia, and Murphy,[6] of Chicago, have recently published cases in which operation removed the symptoms. Russell[4] reports three cases; two were brother and sister. In the sister there was neuralgic pain and wasting of the small muscles of the hand. The rib was removed and the pain ceased, but owing to contusion of the nerves during the operation the paralysis increased and the area of anæsthesia and analgesia also increased; four and a half months later this lessened. In the brother there was weakness of some of the muscles of the hand, but no wasting. There was, however, a kind of writer's cramp; after writing for some time his hand and forearm felt thick, swollen, and heavy, and he had sensations of pins and needles in the ball of the thumb: there was no objective disturbance of sensibility: electrical reactions were all normal: reflexes all normal, and no spinal curvature. Nothing was done in this case. The third case was a female aged twenty-four, who complained of pain in right shoulder and down inside of arm to the hand: cramps of fingers and wrist with flexion: wasting of small thumb muscles. The pain came on four years after a fall on the shoulder, and had persisted on and off ever since, lately getting more severe and frequent. In the fourth case there was some abnormality of the first thoracic or a cervical rib, with occlusion of the subclavian artery, but whether this was due to pressure by the rib is doubtful. Russell gives a good bibliography.

REFERENCES.—[1]*Johns Hop. Hosp. Bull.* vol. xiv. p. 152, Nov. 1903; [2]*Trans. Roy. Med. and Surg. Soc. Lond.* 1905; [3]*Deut. Zeit. f. Chir.* Bd. xli. p. 330; [4]*Med. Rec.* Feb. 16, 1907; [5]*Amer. Med.* vol. x. No. 15, Oct. 7, 1905, p. 616; [6]*Ann. Surg.* 1905.

BRADYCARDIA. (*See* HEART, DISEASES OF.)

BRAIN, CONCUSSION OF.

(*Index of Treatment, p.* 120)—*Stage of Collapse.* Put the patient to bed with **Warm Blankets** and **Hot Bottles**. If necessary, give a pint of warm **Saline Solution** by the rectum, but avoid further stimulation. If unconsciousness persist, give food through a nasal tube or per rectum. *Stage of Reaction* (as marked by a return to consciousness).—Give **Calomel**, grs. v, and a fluid diet. Darken the room, and check noise as far as possible. Apply cold to the head. *Stage of Convalescence.*—Enjoin long rest from work and excitement.

BREAST, CANCER OF.

Priestley Leech, M.D., F.R.C.S.

H. Wunderli[1] gives the results of operation in cancer of the breast during the last twenty-five years in the St. Gall's Hospital. During this period the hospital has been under the direction of the same surgical chief, Dr. Feurer, and a fair comparison can thus be instituted. In order to bring out the results of the various operative methods, he divides the cases into three groups: (1) The operations performed between the years 1881 and 1893, when the breast was removed and as a rule the axilla was also cleared out; (2) The cases operated on in the years 1893 to 1898, when Heidenhain's proposal to remove a layer of the great pectoral muscle, with the overlying fascia, was followed out; (3) Those operated on after 1898, when the whole of the sternal portion of the pectoralis major was removed. Since 1896 the skin covering the mammary gland has been extensively removed, so that in thirty-six cases the skin defects have had to be covered by means of Thiersch's grafts.

Out of 189 cases of cancer there are 143 the final results of which are known. In the first period there were 23 per cent, in the second period 26 per cent, in the third period 40 per cent of cures. These figures illustrate what has been previously shown by the statistics of other surgeons, that free removal of the tissues surrounding a cancerous organ gives a much larger percentage of cures and a longer period of freedom from recurrence.

In the *Annals of Surgery* for July, 1907, there are several interesting articles on the final results in carcinoma of the breast. Many of them are accompanied by statistical tables. Oliver, of Cincinnati, gives the results of his personal experience in cases which he has been able to trace, and he thinks the results are better than his average because the patients are private patients, and represent the more intelligent class, as well as those best able to take care of themselves. He gives the complete histories of thirty-five patients, 62·85 per cent of whom are dead from recurrence, while 34·28 per cent are alive and well from three to ten and a half years after operation. One is alive after more than three years, but is afflicted with an inoperable recurrence. His statistics seem to prove that recurrences and death from carcinoma of the breast are unusual when the patient has remained well for three years after operation. In but three of the thirty-five did death occur from carcinoma after three years; these lived respectively five, four, and three and a half years. The author has met with one fatal recurrence in the axilla fourteen years after the breast had been removed. Recurrence above the clavicle took place in but two cases; while five were recurrences in the opposite breast; it would thus appear that the location of the tumour has some bearing on the prognosis; central growths and those in the lower third of the breast giving the largest percentage of recoveries. Fourteen of the cases were beyond the possibility of cure through operation, which was undertaken with the hope of prolonging life or to remove offensive ulcerated breasts. If these hopeless cases are subtracted, we have twenty-one cases and about 57·6 of recoveries. The most potent factor bearing upon prognosis is the character of the growth: the richly cellular, rapidly growing, soft, succulent, carcinomata are much less amenable to surgical treatment, even if seen early.

Jacobson, of Syracuse, N.Y., says the rapidity with which the disease progresses is of paramount importance, and that there is as much difference in the virulence of cases of carcinoma as there is in acute infectious fevers. In rapid cases the evident virulence of the infection renders a permanent cure impossible. As far as he knows there is nothing which the surgeon or pathologist can discover at the time of operation by which he can determine the degree of malignancy of the affection apart from the rapid course the disease has pursued up to the time of operation. Jacobson in 1896 obtained statistics, from a so-called cancer-cure institution by means of caustic applications, of fifteen patients with carcinoma of the breast: all died of the cancerous affliction after months of torture. The removal of recurrent growths may be followed by lasting cures. Out of seventy-one cases reported and operated on more than three years ago, thirty-five are still living, thirty-three died of metastases, and three within a year after operation from other diseases.

Pilcher, of New York, is of opinion that the supraclavicular spaces should be cleared out, and he does not think that where the infection has reached these glands the prognosis is hopeless. He has found that in his results published in 1900 there were ten cases where supraclavicular glands were discovered and removed, and three remained free from recurrence. In eighteen other cases where the evident extension of the disease at the time they first presented themselves was great enough to awaken apprehension of possible infection of these glands, there were four where the glands were palpable before an incision was made into the overlying coverings. Of the remaining fourteen cases, where the finger could not appreciate the presence of diseased nodes in the neck, it was found that in eleven infected nodes were present, and only in three appreciable disease was not recognized on section; of these three have remained well at the end of five, one and a half years, and one year respectively. Of the four cases where the glands were palpable *ante operationem*, one died three months after operation; one lived five years, but developed recurrent nodules and a growth in the other breast, and died of intrathoracic metastases; one died at the end of two years, ostensibly from pneumonia; and the fourth remains well, without suggestion of recurrence, two years after operation. Of the other eleven cases, four remain free from recurrence at periods of three years, three years, two years, and one year respectively; one died seven weeks after operation; one cannot be traced; of the remaining five, four died from recurrences, and the fifth is still alive and remained free from recurrences for four years, but in the fifth year there was both supraclavicular and thoracic recurrence. He looks upon the triangle formed by the internal jugular and subclavian veins as the key to the situation, and says this should be exposed, explored, and cleaned, and from it outwards the lymphatic-bearing tissue can be best systematically dissected out *en bloc*.

In the same journal are given final results of 376 primary operations at the Massachusetts General Hospital from 1894 to 1904. The summary is very interesting.

1. Out of 416 cases of primary operations for cancer of the breast, 376 were traced to a conclusive end result at an average period of eight years after operation.

2. Sixty-four cases were alive and well, and seven died without recurrence over three years after the operation.

3. Counting in the operative mortality there were 320 attempts at medical cure, 67 of which were successful.

4. During this same period palliative operations were performed on 56 patients, and 52 were discharged untreated.

5. Cases in which the tumour was ulcerated or was adherent to the skin or to the chest wall, and those in which the axillary glands were palpably enlarged, gave notably less promising results than when these conditions did not exist.

6. No case with palpably enlarged, cancerous glands above the clavicle, and none of cancer of both breasts was cured.

7. Medullary carcinoma was more grave than that of the scirrhus type, and adenocarcinoma and colloid were relatively of a far less malignant type.

8. The duration of the disease other than in the individual case exerted little influence on prognosis.

9. Extensive operations with wide removal of skin gave the greatest freedom from local recurrence. Removal of the pectoralis minor appeared to be of slight significance. Incomplete operations on early cases yielded better results than extensive operations on cases which were well advanced.

10. Recurrence in the scar occurred in less than half the cases. Internal metastasis was most frequent in the lungs, mediastinum, axillary and supraclavicular glands, the liver, and the spine.

11. Seventeen out of eighty-eight cases of those passing the three-year limit without evidence of recurrence showed recurrence later, and four developed recurrence six years or more after the operation.

The percentage of successful cases for the different varieties of carcinoma was as follows: (1) Medullary carcinoma 16 per cent; (2) Scirrhous carcinoma 23; (3) Adenocarcinoma 47·6; (4) Colloid 66; (5) Paget's disease 12½; (6) Cancer in the lactating breast 28. The operative mortality of the whole 416 cases was 3·6 per cent. Over half the cases were free of local recurrence, and would have been cured if internal metastasis had not been already present, or did not, as seems possible in certain instances, result from the manipulation of the operation.

Ochsner, out of ninety-eight cases reported, finds fifty-four are living, twenty-nine of whom have been free from recurrence for periods varying from four to thirteen years after operation.

Halsted, of Baltimore, has a most interesting and suggestive paper on the results of radical operations of the breast. As affecting the ultimate result, the variety of cancer, the time that has elapsed since its appearance, the degree of outlying involvement, the activity of the gland (lactation, age of patient), and the thoroughness of the operation are important factors. He includes cases only in which nothing less than the complete subclavicular operation was performed, and only those operated upon three or more years prior to the last news received of them. There are 232 of these cases, and in eighteen the result has not been determined: in calculating the percentage of cures, untraced cases should be reckoned as dead of the disease. In sixty-four glandular involvement was not discovered; nevertheless, in 23·4 per cent of these there was metastasis or recurrence of some sort sooner or later, in six metastasis three years after operation; the late occurring metastasis in these cases is another argument for wide operating. Of the cases with undemonstrated glandular involvement, 70 per cent are tabulated as cured, and 80 per cent were free for three years from signs of the disease. It must be borne in mind that in some, and probably in most of the axillæ recorded as negative, there was disease. Of 110 cases with axillary involvement and negative neck, 24·5 per cent are cured for periods ranging from sixteen to three years. Adding eleven untraced cases with axillary involvement to the 110 in which the result is definitely known, reduces the percentage of cures in this category to 22·4 per cent.

Halsted says that prognosis is quite good in the early stage of breast cancer—two in three being cured; and bad—three in four succumbing—when the axillary glands are demonstrably involved. The neck operation was done in 101 cases primarily, and in eighteen secondarily. In 113 of the 232 cases the supraclavicular operation was omitted. In forty-four the glands of the neck as well as of the axilla were involved; three of these were, it seems, definitely cured. There was also involvement in some of the necks reported as negative. Before accepting the statement of any one that he has cured a case of breast cancer with neck involvement, incontrovertible proof should be demanded. Halsted says that if the microscopic findings were confirmed by an able pathologist, he should still feel that an error might have occurred—for example, in the labelling of the specimen, but in spite of this he thinks it is incumbent on the surgeon in many cases to perform the supraclavicular operation. He should perform it, barring special contra-indications, in the following cases: (1) In cases with palpable, operable neck involvement; (2) When the apex of the surgical axilla is involved: when midaxillary involvement is demonstrable at the operation special implication is almost certain; and hence (3) In these cases also the neck should be specially cleaned of its lymphatics as high, at the very least, as the bifurcation of the carotid. He performs the neck operation in most cases; he omits it in hopeless cases, in most "duct cancers," and in some carcinomata of emphatically adenomatous type in which the axilla at operation is not macroscopically involved. To be able to assert with any degree of positiveness that the axilla and neck are negative involves infinite toil, and a laboratory enthusiast of a rare type is indispensable. In fourteen cases metastasis appeared after three years. Four patients died in hospital, a mortality of 1·7 per cent.

As regards dissemination of breast cancer, his views agree with those of Sampson Handley.

In cancer cyst, the earliest recognizable cancers, the prognosis is excellent if the nature of the disease is perceived at the table; hopeless, so far as his statistics are concerned, if it is not.

Diagnosis.—Patients are presenting themselves earlier, and hence the surgeon is seeing smaller and still smaller tumours, cancers which give none of the cardinal signs. About as difficult a case as any, excepting of course the adenoma in a transitional stage, is a tiny retro-mammary adenocarcinoma or a colloid carcinoma, in a breast covered with one or more inches of fat. If in such a case there should be no shortening whatever of the trabeculæ, the diagnosis could hardly be made. He says pinching up the skin is too crude a method, and the test should be applied by making both breasts take the widest possible excursions on the chest wall under the skin, and noticing if there is the slightest difference in the pull on the skin.

Operation.—Halsted still removes a very large area of skin, and agrees with the remark of his ex house-surgeon, Dr. Follis, that the operator whose duty it is to close the wound should not be entrusted with the planning of the skin incision. Skin-grafting consumes but a very few minutes, and adds nothing to the mortality. Occasionally an incision for diagnostic purposes has to be made, and great care should be exercised to make these exploratory cuts no deeper than is absolutely essential. Rarely is it necessary to carry the knife *into* a cancer, for on exposure of the subcutaneous fat the tell-tale drawing of the fibrous tissue is revealed; sometimes the fat must be cut into for a little distance. He is convinced that the recurrences after incomplete operations, which come as a rule with amazing rapidity when the knife has been used, are, to say the least, relatively later in making their appearance when chemical or actual cauterization has been employed. All incomplete operations for cancer should, when feasible, be made with the Paquelin or actual cautery. He has seen cancer in the axillary glands with no trace of cancer in the breast, and after removal of the glands in the axilla cancer has shown itself later in the breast. In one case with large cancerous axillary glands he found nothing in the breast but a quite indefinite parchment-like induration at the base of the nipple, which was retracted not at all or to a barely appreciable degree. With the performance of the complete breast operation the pains in the extremities, which distressed the patient greatly, vanished. Distressing pains in the knees, the legs, the back, the arms, so severe and so located as to suggest cancerous involvement of the vertebræ, have in two cases disappeared on removal of the growth, which in one instance was large, ulcerous, and foul-smelling; the other was the one just cited.

Ransohoff has gathered from friends' and his own cases thirty-seven of recurrence seven years or more after the first operation for cancer of the breast; of these twenty-six were clearly local recurrences, and eleven were doubtful. Of local recurrences ten occurred during the seventh and eighth year, two after the ninth, tenth, eleventh, twelfth, and fifteenth years, and one each at varying intervals from fifteen to twenty-five years. Even in these late recurrences the tumour growth was in the scar or its immediate vicinity, and it is worthy of note that in some of the cases of longest standing there was no axillary involvement even at the time of the recurrence. Ransohoff suggests that scar tissue is liable to cancer, and why should it not begin *de novo* in the scar of an old breast operation, as it occurs in the cicatrix of a healed gastric ulcer or in that of a torn cervix ?

Cabot, of Boston, gives the result of forty-two private cases: all recovered from the operation, and nine free from recurrence ; the time since the operation in these nine cases has been from four to nineteen years. Five other cases are still living, though they have had a recurrence of the disease. One of these was operated on three years ago, three four years ago, and one five years ago. The remaining twenty-eight have died of the disease. Of these seventeen died within a year ; the remainder within five years. Of the nine cases that are well without recurrence, the pectoral muscles were removed in two ; in the remainder the breast and axillary contents were removed without removal of the muscles.

Bircher[2] relates the case of a man, fifty-two years old, who had a breast carcinoma which was removed and recurred *in situ* thirteen and a half years later, and who died with metastasis in the liver and shoulder. He gives several cases of very late recurrence of carcinoma.

References.—[1]*Deut. Zeit. f. Chir.* Bd. lxxxiv. p. 387, quoted in *Centr. f. Chir.* No. 8, p. 231 ; [2]*Centr. f. Chir.* No. 26, p. 756, June 29, 1907.

BREAST, TUMOURS OF.

Priestley Leech, M.D., F.R.C.S.

Papillary Cystadenoma.—The nomenclature of the benign tumour of the breast is somewhat confusing, and Collins Warren[1] in 1905 suggested the following classification of these tumours :—

I. Fibro-epithelial Tumours:
  (A) Fibrous type
    1. Periductal fibroma
    2. Periductal myxoma
    3. Periductal sarcoma
  (B) Epithelial type (cystadenoma)
    1. Fibro-cystadenoma
    2. Papillary cystadenoma
II. Hyperplasia :
  (A) Diffuse hypertrophy
  (B) Abnormal involution (cystic disease)

Simmons and Greenough[2] recommend this classification, and give a report on twenty cases of " Papillary Cystadenoma Type of Fibro-epithelial Tumours of the Breast." These tumours are not uncommon : they are localized, single or multiple, and involve as a rule the large ducts of the breast. They consist of one or more cysts partially filled with papillary outgrowths arising from the wall. The papillary outgrowths have a vascular, branching connective tissue stalk, supporting a luxuriant growth of epithelium in the form of villous projections and gland-like interlacing tubules and canals ; the epithelium shows no tendency to infiltrate the surrounding tissues. Tumours of this class have been recognized and described under various names: adenoma, villous papilloma, duct papilloma, duct cancer, cystadenoma intracanaliculare, carcinoma villeux, endocanalicular papillary fibroma, etc. Out of the twenty cases reported, three showed the presence of adenocarcinoma; in the other seventeen no evidence of malignant disease was to be found. The following are their characteristics: A palpable tumour was present in every case; in twelve cases it was single; in five a number of different nodules were present, forming a conglomerate mass: the size varied from that of a pea to an orange. Their situation was almost invariably in the central portion of the breast, close to or under the nipple, although the larger cysts extended outwards and occasionally occupied almost the entire substance of the gland. On cross section they present one or more cysts of varying size containing fluid, usually bloody, and filled to a greater or less extent by papillary outgrowths from the wall. The cysts as a rule are well marked off from the surrounding breast tissue, and are not adherent to the skin; in three cases out of seventeen of the simple cases the nipple was retracted, and in two out of the three of the adenocarcinoma. The glands were only enlarged in two cases, and in the cases of adenocarcinoma they showed no malignant involvement. So far as anatomical and histological data were available, their origin was from the fibrous tissue and epithelium of the walls of the larger ducts; metastases were occasionally seen, but were comparatively rare. The rate of growth is slow, and degenerative processes in the papillary masses are not uncommon. The average age was forty-nine and a half years; the youngest being nineteen and the oldest eighty-one. Out of the twenty cases, one was of a male fifty-one years of age; out of nineteen women, in eight the breasts had undergone lactation.

The symptom which is of the greatest value in the differentiation of papillary from other tumours of the breast is the existence of a serous or bloody discharge from the nipple; this was present in eleven out of the twenty cases; in addition, the situation under or close to the nipple, and the slow, painless growth, are of assistance in the diagnosis. They are most likely to be confounded with cancer, abnormal involution, and periductal tumours.

The prognosis is uncertain, but the occurrence of cancer in 15 per cent of these cases warrants the early and complete removal of these tumours, and their classification in a group apart from the periductal type of fibro-epithelial tumours, which show no such predisposition to the occurrence of malignant disease. The authors think that complete removal of the breast in these cases is rarely necessary, unless the tumour is large or multiple, or the microscope shows the presence of carcinoma. This is certainly contrary to the generally accepted surgical opinion in England, which has lately tended to more extensive operations in these cases.

Abnormal Involution of the Mammary Gland.—Various views are held as to the pathology and treatment of the so-called "cystic disease" of the breast. Collins Warren[3] has an article on one form of cystic disease which he attributes to abnormal involution of the gland. Many theories have been held as to the method of formation of these cysts, and in another paper,[4] Warren tried to classify these into three main groups: the inflammatory, the new-growth, and the involution theories. König, with many French and English surgeons, is a strong advocate of the inflammatory theory, and calls it chronic cystic mastitis. The chief points on which the inflammatory theory is based are: the evidences of chronic inflammation in the round-celled infiltration and the thickened stroma of the gland, and stress is laid (König) on the swelling and tenderness of the breast, particularly at the catamenial period, and the frequent exacerbations of the process. The new-growth theory is advanced principally by German observers, who see evidence of neoplastic formation in the very marked changes in the epithelium lining the cysts and the neighbouring acini. The involution theory is based on the disappearance of the acinous tissue of the gland and an increase in the connective tissue; many ducts and acini may become obstructed during this process, and a dilatation ensues, which results in the formation of the cysts, and on palpation the gland is nodular, a condition which Warren has called "cobble-stone." Up to this point the process may be considered physiological: an exaggeration of these processes may result in more pronounced cystic formation and the production of a distinct tumour in the breast, and the condition which he calls "abnormal involution" then ensues. The age at which this occurs is forty to forty-five; a palpable tumour, generally on the upper and inner quadrant, is felt, and the rest of the breast and the other breast present a cobble-stone sensation to the palmar surface of the finger. Pain and tenderness are present in about half the cases. Enlarged axillary glands are detected in only a small proportion of cases. Out of a hundred and fifteen cases of abnormal involution of the breast, Warren found fifty-nine which showed only cystic conditions where the epithelium was in a quiescent state. In the remaining fifty-six the epithelium contained within the cysts showed evidence of a tendency to undergo proliferation, and from this he divides the cases of abnormal involution into two groups, the cystic group and the proliferative group, and this latter is again divided into the (*a*) acinal form, (*b*) papillary form, (*c*) adenomatous form. This is a pathological division, and clinically one form cannot be distinguished from the others. Under the proliferative group we may find a combination of abnormal involution and carcinoma; and out of a hundred and fifteen cases of abnormal involution, fifteen cases of this disease in combination with carcinoma were obtained.

The cysts may rupture; suppuration occasionally occurs; but more frequently the disease becomes stationary at a certain stage of its development, though it always remains as a menace and a source of anxiety to the patient. Both breasts are involved in about 22 per cent of the cases.

Treatment.—Massage is most undesirable, and also forcible rupture of the cysts. Warren has abandoned puncture of the cysts. He now practises what he calls "**Plastic Resection of the Mammary Gland,**" avoiding any scar visible to the patient. The incision is made from the lower end of the outer hemisphere of the breast along the axillary border, and is of sufficient length to expose freely the upper and outer quadrant of the breast; this incision is carried down to the pectoral fascia, and is continued in the loose tissue between that fascia and the fascia of the mammary gland. With the other hand the surgeon everts the anterior wall of the wound thus made, and exposes freely the posterior wall of the gland, where any cyst is easily recognized; the segment of the gland containing the larger cysts, generally one or two in number, should be carefully excised, if possible without opening them. The remaining segments of the gland may be incised to discover other cysts. The incision for removal of a segment is V-shaped, with the apex of the V under the nipple. This operation is also an ideal one for exploration in doubtful cases, and if the nodule is found to be cancerous the breast can be removed. The V incision, after removal of the cyst, can be closed by a continuous catgut suture. If a large cyst is accidentally opened, he sponges the wound with a weak solution of corrosive sublimate.

References.—[1]*Jour. Amer. Med. Assoc.* July 15, 1905; [2]*Ann. Surg.* Feb. 1907; [3]*Ibid.* April, 1907; [4]*Jour. Amer. Med. Assoc.* July 15, 1905.

BRIGHT'S DISEASE. (*See* Nephritis.)

BROMIDE ERUPTIONS.

E. Graham Little, M.D., F.R.C.P.

Pasini[1] describes the histology of a case of a papulo-pustular eruption due to the ingestion of bromide of potassium. Masses of leucocytes were found in the epidermis and in the corium, without any apparent association with the glands or appendages of the skin, but definitely around blood-vessels. There was much œdema of the corium, with development of new connective-tissue cells, and with destruction of collagen and elastic fibres. Certain of these connective-tissue cells in the walls of the capillaries appear to have the property of ingesting leucocytes and exerting phagocytic action. Bromine was not detected in the pustules, and Pasini claims that the failure to find it is due to the fact that it enters into combination with albumin, and is then not revealed by the ordinary tests. Bromide poisoning is due, in his opinion, to the setting free of bromine from its salts by some agency in the blood which he suspects to be a diminished chloride-content. Free bromine, in contradistinction to its salts, exerts a strong positive chemiotaxis on the white blood corpuscles, and this fact explains the accumulation of leucocytes seen in the sections of the lesions. Although not present in the pustules, bromine was found in the urine of the patient during the administration of the drug, and in diminishing quantities for a month after its withdrawal.

No treatment need as a rule be adopted, as the eruption disappears on cessation of the drug. In some cases, however, when there is much pustulation, local application of dilute white precipitate ointment is useful.

Reference.—[1] *Ann. de Derm. et de Syph.* Jan. 1906. p. 1.

BROMIDROSIS.

(*Vol.* 1906, *p.* 150)—Weiss's treatment: Wash the feet daily, and rub them with wool soaked in **Benzine.** Bathe the feet for 15 minutes in a 1 per cent warm Solution of **Permanganate of Potash** at night. Dust the feet, in the morning, with a powder consisting of Potass. Permang., 13 parts; Zinc Oxide, 18 parts; Zinc Chloride. 18 parts; Alum, 1 part; and Talc, 50 parts. Clean socks must be worn daily, and the toes separated by a little boric wool. The strength and heat of the permanganate bath should be increased daily. To this may be added another measure, namely, the dusting of the interior of the socks every morning with **Boric Acid** Powder.

BRONCHI AND LARYNX, DISEASES OF.

P. Watson Williams. M.D.

Tracheobronchoscopy and the Direct Examination of the Hypopharynx.—It is convenient to group together these newer methods of examining and treating the air-passages and the corresponding regions of the lower pharynx and œsophagus, because in every case the " direct method " of examination is used, as distinguished from the " indirect method," or that by reflection of the parts to be examined in a laryngoscopic mirror. To Killian, of Freiburg, we are indebted for tracheobronchoscopy, and although his recent communication, from which we quote, is based on a ten years' experience of the method, it is still but little known and rarely practised, except by a few specialists. The *modus operandi* is well illustrated on the plates we reproduce by the courtesy of Prof. Killian and the Editor of the *Laryngoscope.*[1]

Simple upper direct tracheoscopy (*Plate VII. Fig. B*) may be carried out with adult patients in the sitting position after cocainization of the larynx and trachea, and in children under a general anæsthetic. One is enabled to inspect the changes in the trachea, such as granulation, tissue growths, cicatricial bands, infiltrations, ulcerations, benign and malignant growths, and foreign bodies. Much more often, however, the method is employed by Killian for observing alterations in the position and form of the trachea due to enlargements of the thyroid, (which when partly or entirely intrathoracic, produce alterations of special interest and value), or to tumours of the anterior mediastinum and hypertrophies of the thymus (compression of the lower half of the trachea from in front); aneurysm of the aortic arch (bulging of the lower third from the left side, or even simultaneously from in front or behind); carcinoma of the œsophagus situated high up (compression from behind); and enlargement of the tracheal glands (compression from the sides).

It is, perhaps, in the removal of foreign bodies that direct tracheobronchoscopy has proved most strikingly successful. Killian states that he has been able to collect eighty-seven instances where the method has been utilized for the diagnosis of the presence of foreign bodies, the great majority being his own cases. In nine-tenths of the cases where foreign bodies were found in the trachea or bronchi, they were successfully removed through the tube, introduced either through the mouth or through a tracheotomy wound. Tracheotomy, Killian considers, should only be done in cases of necessity, i.e., where there is urgent dyspnœa, or where it is called for by the size or shape of the foreign body, or by serious complications, especially in the lungs.

Killian thus describes his improved method, especially for tracheo-bronchoscopy:—It is carried out with hanging head, under a general anæsthetic, chiefly because he prefers general anæsthesia in all cases of a foreign body—both in children and adults—in which the external and internal conditions are not quite simple. He makes use of a tube-spatula (*Fig.* 31) which is widened in front and divided into two halves along its length, so that it can be easily removed from any tube introduced through it. (*Plate VIII, Figs. C, D.*) It is passed over the middle of the tongue to its base, and placed between that organ and the epiglottis. By suitable pressure upwards the interior of the larynx is rendered visible, and the mucous membrane is brushed with 20 per cent cocaine solution. Next, the point of the spatula is passed over the epiglottis, which is pulled upwards, and a view obtained into the trachea as far as the larger bronchi. In *Plate VIII, Fig. C*, the situation as described is made clear. It shows at the same time how the trachea and bronchus are brushed with cocaine through the tube-spatula. Now follows the tracheo-bronchoscopy proper, that is, the introduction of a tube into the trachea or bronchus. For this purpose it only remains to select a tube of proper calibre and suitable length, and to pass it through the tube-spatula into the deeper parts below. Lest it interfere, the spatula is then separated into its two halves and removed. (*Plate VIII, Fig. D.*)

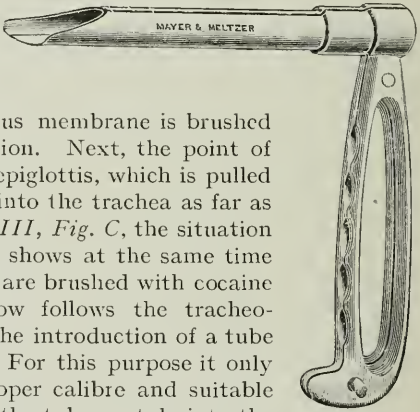

Fig. 31.
Killian's Tube Spatula.

The position of the patient in tracheoscopy, and method of using the tubes in actual practice are shown. (*Plates IX*, and *X*.)

REFERENCE.—[1]*Laryng.* Dec. 1906.

BRONCHITIS. *R. W. Philip, M.D., F.R.C.P.*

Thiroloix and Debré[1] emphasize the co-existence of two etiological factors in the production of *Bronchiectasis.* They believe that it is possible in most cases to trace a process of chronic inflammation in the bronchi of suppurative and destructive character. As a result of this, the resistance of the bronchi is definitely weakened, and the stress of coughing leads finally to dilatation. They conducted a series of observations to determine the influence of various bacilli on the bronchial mucous membrane, and found that only such bacilli as produced inflammation were capable of inducing dilatation.

KILLIAN'S DIRECT LARYNGOSCOPY.

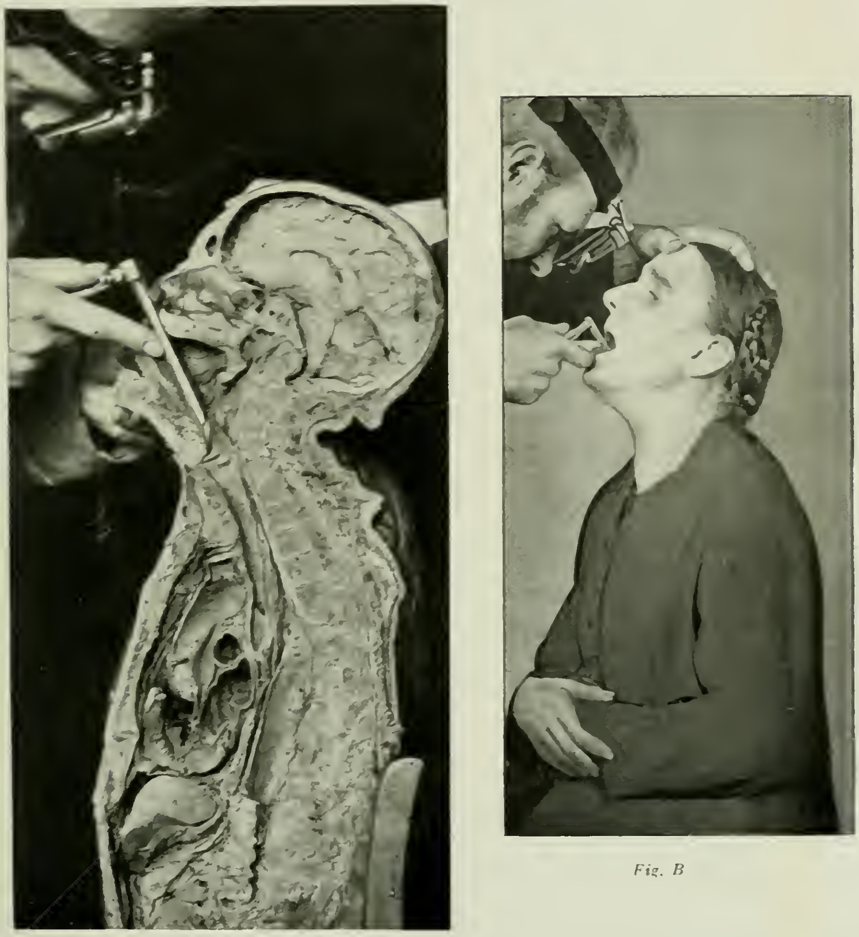

Fig. A.

Fig. B

Prof Killian's direct laryngoscopy in the erect position under local anæsthesia. *A*. The method demonstrated on the cadaver section. *B*. The method in the living patient.

PLATE VIII.

KILLIAN'S TRACHEOSCOPY

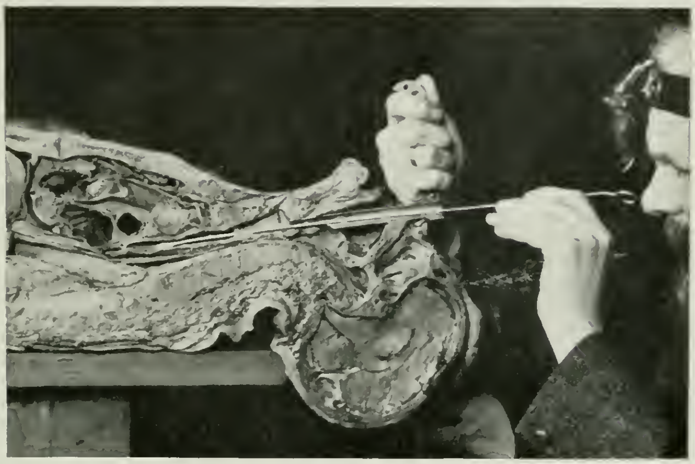

Fig. C

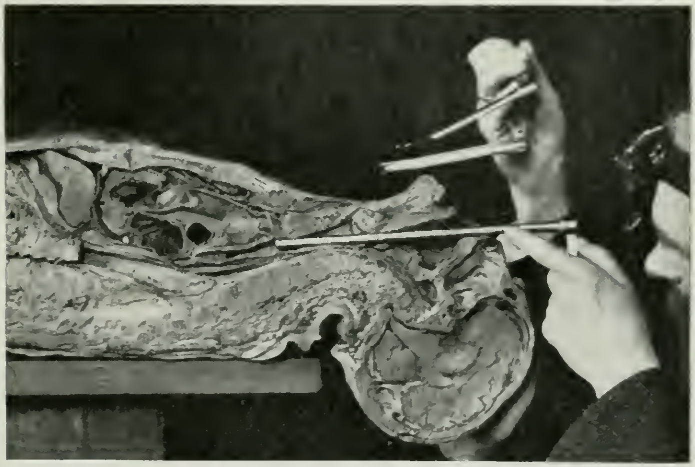

Fig. D.

C. Prof. Killian's method of using the bivalve tube spatula, for applying cocaine to the trachea, etc., before introducing the tracheo-bronchoscopy tube. *D.* The tracheal tube having been introduced, the tube spatula, separated into its two pieces, is removed.

PLATE IX.

KILLIAN'S TRACHEOSCOPY.

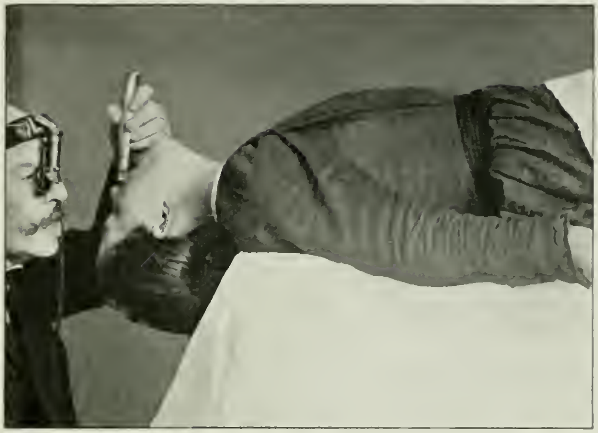

Fig. E

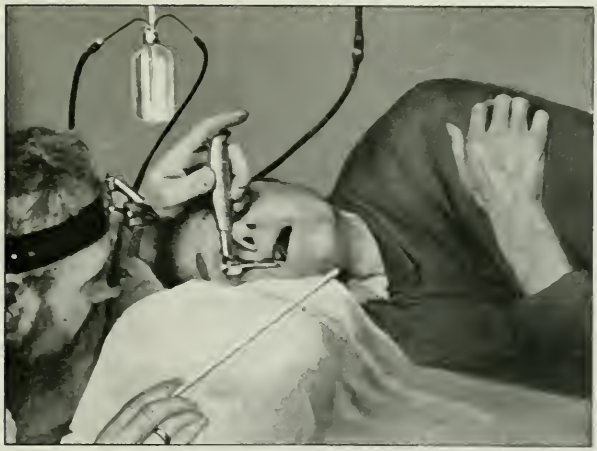

Fig. F.

Prof. Killian's tube spatula introduced (*E*) in the dorsal position, (*F*) with the patient lying on the right side.

PLATE X.

KILLIAN'S BRONCHOSCOPY.

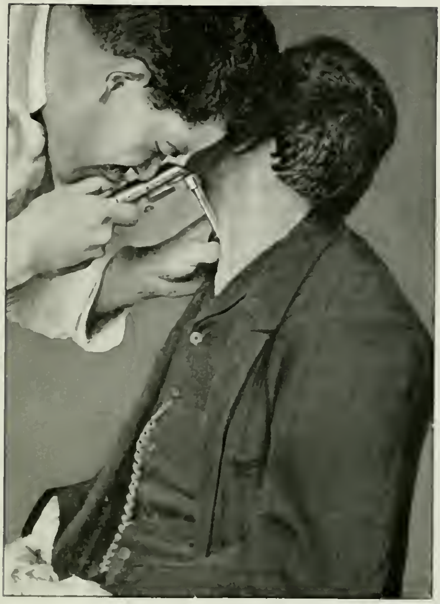

Fig. G

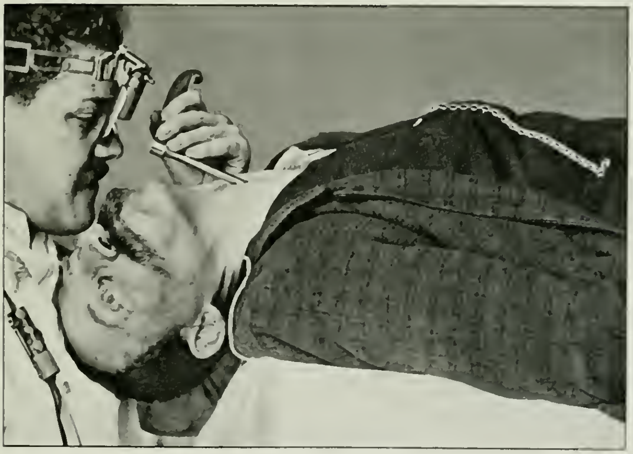

Fig. H.

Prof. Killian's bronchoscopy through a tracheotomy wound (*G*) in the erect position, (*H*) in the dorsal position.

Under the title of *Fœtid Bronchitis*, Rabé[2] discusses the etiology and varying pathological and clinical appearances associated with the presence of fœtid expectoration. He draws a sharp distinction between the simpler and more curable variety and the more deeply-seated, gangrenous variety. In the former, while the bronchial mucous membrane is unhealthy—inflamed and thickened—there is an absence of ulcerative and gangrenous appearance. The latter presents more or less extensive gangrene. This is, indeed, its leading characteristic. The distinction is admittedly one which is easily stated, but which is more difficult of determination, clinically and even pathologically, apart from histological examination. The etiology, and more particularly the bacteriology, of fœtid bronchitis is discussed. A number of organisms have been discovered in the expectoration, and described by various observers. One bacillus in particular, grown on blood serum, yields at the end of a week a characteristic fœtid odour closely resembling that found in the discharge. Introduced into the trachea or lung substance, it sets up a chronic interstitial pneumonia, and sometimes a gangrenous lesion. Luminger believes this to be the essential cause, and Rabé favours the contention. It seems likely that both varieties of fœtid bronchitis are due to the presence of organisms—the slighter, intermittent variety possibly to an aerobic form, the deeper, gangrenous variety to an anaerobic form.

From a diagnostic point of view, the slighter variety shows in the fœtid expectoration an absence of elastic fibres which appear sooner or later in that from the other variety. In the first variety the fœtor is less pronounced, and tends to come and go; in the other, it is continuous, the patient is manifestly gravely ill, and a fatal termination is usually soon reached. The diagnosis is further assisted in the second variety by the determination of areas yielding percussion dullness and crepitations, etc., on auscultation.

TREATMENT.—Rabé has little new to add in respect of treatment. He advises the persistent use of antiseptic measures, such as **Eucalyptus, Terebene, Thymol, Creosote, Menthol,** exhibited by inhalation, fumigation, or orally. The internal use of **Hyposulphite of Sodium** and tincture of **Benzoin** is also recommended. When the stomach tolerates such remedies badly, they are conveniently given subcutaneously. **Expectorants** are serviceable for the purpose of discharging the stagnant, unhealthy secretion. Operative interference is discussed and wisely excluded, save in those cases where one focus of excavation is alone present, where it is comparatively superficial, and its limits determinable by percussion and auscultation.

Lancereaux[3] pleads strongly for the energetic treatment of all forms of fœtid bronchitis and bronchiectasis, with a view to prevent the slighter cases passing on to the graver gangrenous variety. Where gangrene threatens, he speaks encouragingly of the early persistent use of **Hyposulphite of Sodium** in sufficiently large doses. Under its influence, at the end of a week, the fœtor of breath and expectoration lessens, the sputum becomes more viscid, and loses its greenish-grey colour, and the general state improves correspondingly. The dose of hyposulphite of sodium should be from 4 to 5 grams daily. It may be associated with **Eucalyptus.** If the oral exhibition of eucalyptus cause diarrhœa, it may be given in large doses by enema. Treatment must be kept up for several weeks.

Chaplin[4] discusses the varieties of bronchiectasis, and the treatment more particularly of saccular bronchiectasis. While there is nothing conspicuously new, he argues against a *laisser faire* policy, and presses for a thorough attempt at disinfection, (1) by emptying the cavity methodically, by means of position (raising the foot of the bed, etc.), and (2) by means of antiseptic agents introduced directly into the air-passages. Of the latter, he especially recommends **Creosote Vapour,** citing again the experience of workmen in large creosote works. Considerable stress is laid on the exactness of details. The room should be small, about 7 or 8 feet square, as air-tight as possible. A certain amount of fresh air should be allowed to gain access to the room. Five or six ounces of commercial coal-tar creosote are placed in a moderately deep enamel dish on a tripod, and the vapour is discharged by means of a spirit lamp. The patient's eyes should be protected. The sitting should last for about twenty minutes at first, and the time be gradually increased to about an hour, the density of vapour being similarly increased. Treatment should be continued if possible from six weeks to three months. While a permanent cure cannot be promised, the more disagreeable aspects of the disease are checked, and more dangerous developments prevented. Intratracheal injections are mentioned in rather cursory fashion, and the suggestion is made that their use involves too great manual dexterity. This seems a pity. Since he proposed the method twenty years ago, the reviewer has found intratracheal injections of the greatest service, and has not experienced any difficulty either on the part of patients or assistants in carrying out the method.

REFERENCES.—[1]*Gaz. d. Hôp.* April 9, 1907 ; [2]*Ibid.* July 13, 1907 ; [3]*Jour. de Méd. Interne*, Oct. 15, 1906 ; [4]*Pract.* Dec. 1906.

BUBO.

(*Vol.* 1903, *p.* 164)—Can be cured without suppuration, according to H. M. Christian, by an application consisting of equal parts of Ung. **Hydrargyri,** Ung. **Belladonnæ, Ichthyol,** and **Lanolin.** The application is to be renewed every other day, and the whole treatment will occupy one or two weeks. (*Vol.* 1891, *p.* 232)—Another means of avoiding free incision is recommended by Poutain, who **Punctures** the bubo as soon as it suppurates, and washes out the cavity with **Sublimate Lotion,** The cavity is then filled with liquefied vaselin containing **Iodoform,** and a dressing applied.

BULLOUS DISEASES.

E. Graham Little, M.D., F.R.C.P.

It is notorious that much confusion reigns in the classification of bullous eruptions, and that many old landmarks are being shifted in the attempt to group them. Four diseases in which the bulla is a more than accidental or temporary lesion are pemphigus, dermatitis herpetiformis, pompholyx, and epidermolysis bullosa. Johnston[1] considers that these types are interchangeable with one another, and have, indeed, a common basis of causation, with the exception of epidermolysis bullosa, which so far stands apart, but which not improbably will be brought into line with the others by the occurrence of border-line cases. This common basis he considers to be the absorption of an endogenous toxin, probably derived from failure of proteid metabolism. He claims to have observed a prodromal period of intoxication, characterized by malaise, anorexia, vomiting, pain in head, joints, or muscles, sometimes by actual rise of temperature; and considers that the time has arrived for regarding these forms of disease as "general systemic disorders, whose ordinary expression on the skin is a bleb."

The urine should give the clearest indication of systemic poisoning, and elaborate analyses of urine in cases of dermatitis herpetiformis, pompholyx, and prurigo were undertaken, with the somewhat unexpected result that no very definite information with regard to the mode of excretion of nitrogen was forthcoming, with the single exception that indicanuria seems to be a constant accompaniment of bullous diseases, and ' "chemists, clinical pathologists, and clinicians" are said to be agreed that "the presence of indican in the urine is always an indication of auto-intoxication." With this conception, Johnston regards local treatment as of secondary importance in these cases, and directs attention to elimination and diminished intake of proteids. The **Diet** should consist as far as possible of non-nitrogenous substances, fruit and vegetables being substituted for these. **Saline Cathartics** sufficient to ensure one motion daily must be prescribed, and fluid should be taken plentifully—at least three quarts in addition to that taken at meals. **Lavage** of the colon is described as necessary in some cases. Open-air exercise is recommended with the purpose of eliminating toxic materials; and **Hot-air Baths,** with the ingestion of **Pilocarpine,** to ensure sweating, may be usefully tried. Under this routine indicanuria is said to disappear and the symptoms to improve simultaneously.

REFERENCE.—[1]*Brit. Med. Jour.* Oct. 6, 1906.

BURNS.

(*Vol.* 1899, *p.* 192)—Remove clothing; bathe the affected parts, or the whole body, in **Boric Acid Lotion** at 100° F. Clean the burnt parts with wool soaked in Boric Acid Lotion; wash the surrounding skin with 5 per cent **Carbolic Lotion,** followed by soap and water and turpentine. Burns of the first degree are to be covered with **Boric Ointment** on Lint. In severer cases, the best dressing is boiled lint soaked in a saturated Solution of **Picric Acid,** the smooth side being applied to the damaged area. This dressing need not be changed if the parts are aseptic.

CAISSON DISEASE.

Purves Stewart, M.D.

The symptoms and morbid anatomy of this affection have recently been studied afresh by Zografidi,[1] a Greek medical naval officer, who has observed no fewer than 260 cases among the sponge-divers of the Mediterranean, of which cases seven came to autopsy. The disease, as is well recognized, results from the fact that excessive atmospheric pressure causes air to become dissolved in the blood, according to

Dalton's law. If sudden decompression occurs, in ascending too rapidly to the surface, the dissolved air is disengaged in the form of bubbles, which, circulating in the blood, form gaseous emboli in the various organs, and especially in the central nervous system, producing the characteristic clinical phenomena. Caisson disease occurs in three clinical types :—

1. The *Fulminating type*, which is fatal within a few minutes ; the patient becomes comatose ; the whole body is swollen by generalized emphysema ; hæmorrhages occur from the nose, ears, pharynx ; there are also subcutaneous and subconjunctival hæmorrhages.

2. The *Acute type*—the commonest variety—in which the diver complains of intense pains in the trunk and limbs, impairment of vision and hearing, and tinglings of the limbs, which soon become paralyzed in motion and sensation. As a rule the phenomena, which are exactly similar to those of acute myelitis, remain permanent or undergo but slight improvement.

These cases are found pathologically to have numerous gaseous emboli in the spinal arteries, with corresponding foci of necrotic softening. Sometimes capillary hæmorrhages occur in the substance of the cord.

3. The *Mild and Transient type*, whose phenomena consist in pain and tinglings in the trunk and limbs, with transient paraplegia passing off in a few hours, and probably due to extravasation of air from the capillaries of the cord.

Treatment.—The first essential is **Recompression** of the patient, who must be replaced in an atmosphere of compressed air. For this purpose every caisson should have a special compression chamber, with suitable valves for regulating the atmospheric pressure. In slight cases, if the patient be promptly placed in the recompression chamber, his pain completely disappears long before the pressure has risen to that at which he had been accustomed to work. Nevertheless, the pressure is raised till it equals the original " working " pressure. It is maintained for five minutes or so at this level, and then the patient is gradually " decompressed," i.e., the pressure is slowly lowered. The best rate, according to Pelton,[2] is about half a pound per minute. In mild cases the patient leaves the decompression chamber feeling well. But if the pain returns, recompression may be necessary, and can be repeated three or even four times. Even severe cases, with paraplegia, should be given the benefit of recompression at the outset, although if air-emboli with consequent infarctions and necrosis have occurred, the prognosis is less favourable.

References.—[1]*Rev. de Méd.* Feb. 1907, p. 159 ; [2]*Amer. Jour. Med. Sci.* May, 1907.

CANCRUM ORIS.

(*Vol.* 1890, *p.* 193)—Cut away the sloughs, and swab the surface freely with 1–500 **Mercuric Perchloride** Solution ; dress with lint soaked in 1 in 1000 Mercuric Perchloride Solution. Feed liberally meanwhile. (*Vol.* 1902, *p.* 28).—**Formaldehyde** (4 % in glycerin) is recommended as a local application.

CARDIOLYSIS.

Priestley Leech, M.D., F.R.C.S.

W. Danielsen[1], of Marburg, reports a case of chronic adhesive mediastino-pericarditis in which an operation gave much relief. He thinks the indications for this operation will be widened in the future. He recommends Sudeck's method of ether narcosis with morphia as the most suitable anæsthetic. (*See also* HEART and BLOOD-VESSELS.)

REFERENCE.—[1]*Beitr. z. klin. Chir.* Bd. li. Heft 1.

CATARACT.

A. Hugh Thompson, M.D.

Bottle-makers' Cataract.—In the *Medical Annual* for 1904[1] will be found a summary of a paper by Robinson dealing with the prevalence of cataract among bottle-finishers in the county of Durham. Snell, of Sheffield, doubts his conclusions, and from his experience states that there is not sufficient evidence to show that they are liable to the affection to such an extent as has been asserted.[2] In another paper Robinson returns to the subject, and brings fresh evidence to bear.[3] The bottle-makers that he refers to are not flint-bottle-makers who make medicine and other lighter and better-class bottles: for here the finisher "sits yards away from the furnace": but they are the makers of wine and whisky bottles, for which huge tanks heated to 2500° F. are used. Into these furnaces a "finisher" has to look for at least sixty-six minutes a day, or five and a half hours a week. In the trade society to which these workmen belong, out of 114 superannuated members (all necessarily over fifty years), 37, or 32·4 per cent, had cataract, and all but one of these were incapacitated for work through the eye condition. It seems that the frequency of cataract in bottle makers is in proportion to the extent and length of exposure of the eyes to the fierce glare of the tanks. It is the posterior cortical layers of the lens which are first affected, producing a saucer-like opacity with its concavity forwards. It is suggested that the prolonged exposure to great heat may cause a drying of the lens substance and a consequent shrinking of the fibres from the lens capsule. The equatorial region, being sheltered behind the iris, escapes at first, and the effect is greatest where the heat rays are concentrated, which is near the posterior pole of the lens.

The obvious preventive is for the men to wear dark-coloured spectacles or goggles, because glass possesses the property of allowing only 30 per cent of the heat to pass through it. This has been carried out in some works, though considerable difficulty was experienced from the condensation of the moisture from the excessive sweating of the men while at work. This was apparently overcome by the application to the glasses of a kind of soap.

Extraction in the Capsule.—In last year's *Medical Annual* it was mentioned that a brisk controversy had arisen among Indian surgeons on the above subject. In the interval this has become still more lively. Smith,[4] the originator of the method, extols it over the usual method, but the fact emerges that with the important exception of Smith himself, who has performed over 13,000 extractions in the capsule,[5] the Indian operators of the largest experience, such as Herbert, Maynard, and Elliot, who have tried it, have abandoned it in favour of the older method. The main advantage of Smith's operation is that it leaves no soft matter behind to cause iritis, and no capsule to necessitate a subsequent needling. The great objection to his operation is that it is difficult to perform without encountering a loss of vitreous, and although in the hands of Smith himself this accident occurs in not more than 6 or 7 per cent., in the hands of other operators the proportion has been as much as 30 or 40 per cent. It is perfectly true that in most cases a slight loss of vitreous has no bad consequences. Still, it is not an occurrence which any operator likes to witness, and if the loss of vitreous is considerable the consequences may be grave. At the time of the operation the opening up of the vitreous chamber provides an extra chance of infection of the globe. In the succeeding period the normal tension may only be restored slowly, and a possible late result is detachment of the retina.[6] On the other hand, it must be admitted that in the hands of the originator Smith's operation appears to be an ideal one. A good account of the details of the method is given by Williamson,[7] who has been an eye-witness of nearly two hundred operations by Smith. Many, even of those surgeons who are strongly opposed to it as a routine procedure, admit that for exceptional cases of over-ripe cataract, with thickened capsule, it is the best operation.

Couching for Cataract.—It is well known that in India a large proportion of cataract patients among the natives submit themselves for operation to native quacks, who introduce a needle into the eye, and forcibly dislocate the lens into the vitreous chamber. In the majority of cases the eye becomes blind, but in a minority (twenty-nine out of sixty-three cases seen by Maynard,[8] thirty-nine out of 125 seen by Elliot[9]) the eye retains more or less useful vision. It has even been argued that in certain exceptional cases the operation may be surgically justifiable.[10] This opinion is refuted by Elliot,[9] who points out how exceptional difficulties, which are supposed by some to contra-indicate the ordinary operation, can be best met. Thus, for patients who are extremely deaf or of unsound mind and unruly, the alternatives are either to put the patient under a general anæsthetic, or to obtain command of the globe by means of a conjunctival suture held by an assistant. Special conditions of ill-health, and especially chronic bronchitis with much coughing, must be treated as a preliminary to the ordinary operation, but do not contra-indicate it. Most important of all, the risk of infection from a dacryocystitis must be removed by excision of the lachrymal sac.

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CATGUT. (*See* SUTURES.)

CEREBROSPINAL MENINGITIS, EPIDEMIC.

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By the term epidemic cerebrospinal meningitis we understand an acute inflammatory affection of the meninges of the brain and spinal cord due to the presence of the *Diplococcus intracellularis* (*Weichselbaum*) (meningococcus). Although the word "epidemic" has been appended to the name of this disease almost from the time it was first recognized as a clinical entity, it is somewhat inaccurate, for, as is now well known, its occurrence in sporadic and endemic forms is by no means rare.

The disease was first recognized and described, under the name of *fièvre cérébrale ataxique*, by Vieusseux, who witnessed a small epidemic in Geneva during 1805. In 1806 it was first observed in North America, at Medfield, Mass., where its clinical features were described by Danielson and Mann. Since that time the North American Continent has become the endemic home of the disease, and it is here that the most extensive and severe epidemics have been observed. None of the European countries, however, has escaped a visitation of the disease at one time or another during the last hundred years.

Hirsch, in his well-known handbook on historical-geographical medicine, divides the epidemiology of cerebrospinal meningitis into four epochs, namely, 1805–1830, 1837–1850, 1854–1875, and 1881–1886, when his book was published. We may add a fifth epoch, beginning in 1904 and continuing to the present time.

In the early periods of its recognition, cerebrospinal meningitis was not clearly differentiated from typhus, pernicious malarial fever, tetanus, and other forms of meningitis. It was not until bacteriology had made the marvellous strides during the eighth, ninth, and tenth decades of the last century, that a clearer understanding of the disease was obtained and a more scientific classification made possible. The meningococcus was first described by Leichtenstern. It was isolated by Weichselbaum in 1887, in the exudate of six cases of meningitis post mortem. He recognized the etiological relationship of the diplococcus to the disease, but at that time, however, did not consider this organism the sole cause of epidemic cerebrospinal meningitis. Jaeger confirmed his observations as far as finding diplococci in the tissues post mortem, but was probably dealing with another organism, as it showed different staining properties and cultural growth from those of the meningococcus. Heubner succeeded in demonstrating the presence of the meningococcus in the cerebrospinal fluid during life. He also successfully inoculated a goat with a culture of the meningococcus, producing a purulent meningitis.

Etiology.—Cumulative observations and bacteriological studies have confirmed Weichselbaum's original observations and views as to the relationship of the *Diplococcus intracellularis* to epidemic cerebrospinal meningitis, and it has become more and more clear that the sole and only direct cause of this type of meningitis is the *Diplococcus intracellularis meningitidis*. For many years, and up to a comparatively recent period, this question was a bone of contention among the leading bacteriologists of Europe, due to the fact that diplococci of different staining properties and cultural growth were found in the cerebrospinal fluid withdrawn by puncture. Recent studies have shown, however, that these differences are not constant and material, and that one—and only one—diplococcus is concerned in the causation of the disease. The meningitis caused by the pneumococcus, which for many years was considered, even by Weichselbaum, coequal with the meningococcus as an etiological factor, has now been definitely separated from epidemic cerebrospinal meningitis, and placed in a separate rubric.

Our knowledge of the etiology of this disease, aside from its bacteriological aspects, has made very little advance in recent years. We are still in the dark as regards the determining causes of the onset of an epidemic and the manner of the dissemination of the disease. As is the case with most of the scourges that from time to time afflict mankind, poor hygienic conditions, lack of fresh air, improper and insufficient food, and overcrowding, play an important rôle as predisposing factors in the causation of the disease. Thus, in New York City, during the last and severest epidemic that this metropolis has ever experienced, the districts inhabited by recently arrived European immigrants were strikingly the storm centres of the disease.

Sporadic or endemic cases occur at all seasons, but are most frequent during the winter and spring months. Most of the epidemics have occurred during the winter season. While the disease affects persons of all ages, the periods of infancy and childhood show a special susceptibility; thus, of 2775 cases reported to the New York Board of Health during 1905, 67 per cent were in children under ten years of age, and 15 per cent in infants below one year of age. The youngest patient in my personal experience was six weeks old. Cerebrospinal meningitis shows no sex predilection. A marked feature is its territorial selection. We have previously mentioned the frequency with which the United States has been visited by epidemics. In Europe, Switzerland, Italy, France, Ireland, and Germany have had repeated epidemics, while England, Scotland, and Austria have been comparatively free from the disease. Another peculiarity of this capricious disease is the fact that in certain epidemics it is confined to certain localities and to persons of one trade or occupation, as soldiers, sailors, miners, etc.

Bacteriology.—The meningococcus is an organism which in size, appearance, and staining reaction resembles closely the gonococcus. It occurs in pairs and tetrads, with the flattened surfaces in apposition, mostly within the pus cells. It grows best on a medium consisting of a mixture of ascitic or pleuritic fluid and agar, but even on this medium it requires frequent transplantation. In cultures it tends to undergo rapidly degenerative changes.

Mode of Infection and Portal of Entrance.—Although these all-important questions have received the attention of observers almost from the time of the discovery of the germ, they have remained unsolved to the present day. Numerous hypotheses have been advanced, some probable, others improbable, and none that has so far satisfied the demands of scientific proof. The hypothesis that has received most support, and is now held by many competent observers, is one that assumes the primary lodgment of the meningococcus in the mucous membrane of the nose and post-nasal tissues. The chief support of this theory is obtained from the results of cultures from the nasal and pharyngeal secretions and autopsies made on cases of meningitis that died early in the course of the disease. Some observers have found the meningococci in the nasal secretion in fully 50 per cent of their cases, while others have found them in comparatively few.

The most recent and important work in this field has been done by Westenhoeffer, who was delegated by the German Government to study a severe epidemic in Upper Silesia. He succeeded in demonstrating the presence of the meningococcus in the post-nasal region. In these cases he also found an inflammation of the tissues of the post-nasal region (in the early days of the disease).

Granting with Westenhoeffer that the primary focus of the disease is in the pharyngeal tonsils, post-nasal region, and the sinuses and cavities in the vicinity, there are three possible routes by which the meningococcus may reach the brain and cord, namely, by way of the blood, the lymphatics, or by contiguity. Although the lymphatic route would at first sight appear most probable, there are several facts which militate against the acceptance of this view. It has been proved that the cranial lymphatic flow is from the cranial cavity outwards toward the lymphoid tissue of the pharynx, and not in the opposite direction. Again, in those cases where a neuritis of the cranial nerves was found post mortem, the pathologic changes were most marked at the proximal ends, showing that the inflammation had extended from the cortex outwards. The hæmatogenetic hypothesis of the origin of meningitis has lately gained many adherents, due to the more frequent positive results of blood cultures. The not infrequent presence of such complications as arthritis, pericarditis, pleurisy and panophthalmitis, would also seem to support this view. However, many more observations must be made before this important question is finally decided.

CONTAGIOUSNESS.—Epidemic cerebrospinal meningitis occupies a unique position among the acute infectious diseases, in that it is not contagious in the ordinary acceptance of this term. This is proved by the universal experience of clinicians who have had an opportunity to study the disease in hospital wards. It has been found that isolation of these patients in separate wards is a dispensable and apparently unnecessary precaution, as the communication of the disease from one patient to another is almost unheard of. Thus, at the Mount Sinai Hospital during the past fifteen years, there has been no single instance of the transmission of the disease to neighbouring patients, although no unusual measures for isolation had been taken, the patients being permitted to occupy the general wards. From recent observations it appears that, as in the case of other germ diseases, the transmission of epidemic cerebrospinal meningitis may be effected by means of an intermediary—a person who, harbouring the meningococci in his throat, as a result of having come in intimate contact with a meningitis patient, acts as the medium of infection.

Pathology.—As its name implies, the lesions in this disease are chiefly confined to the meninges of the brain and cord. Those portions of the pia and arachnoid overlying the parietal and occipital lobes and the cerebellum are most severely affected; but there is also an œdematous swelling of the other part of the leptomeninges. In the meshes and on the surfaces of these membranes there is present an exudate varying in character with the severity and duration of the disease. It may be seropurulent, purulent, or fibrinous. The meninges of the cord are similarly affected to those of the brain, but to a less marked degree. In addition to the changes in the pia and the arachnoid, we usually find an accumulation of fluid in the ventricles of the brain, and in the central canal of the cord. A dilatation of these cavities not infrequently results from the increased pressure of the fluid. By contiguity, we may have an inflammation of the cortex of the brain and of the cranial nerves. In more chronic cases, the leptomeninges become thickened. The foramen of Magendie may become obliterated as a result of these changes, leading to a marked distention of the ventricles, which clinically gives the symptoms of chronic hydrocephalus.

Symptomatology.—The ordinary type of the disease gives a characteristic clinical picture. The onset is sudden, with rapid rise of temperature, rigor, repeated projectile vomiting, excruciating headache, intense pain in the neck and back, photophobia, hyperæsthesia, and extreme restlessness. In infants and children the chill is frequently replaced by repeated convulsions. Soon after the onset, rigidity of the neck sets in, and the Kernig sign appears (*Plate XI, Fig. A*). There is often present a peculiar spasm or twitching of the extremities, especially of the arms. This symptom is especially frequent in infants. The pulse is rapid, and slightly irregular; respiration maintains the normal ratio to the pulse and temperature. The temperature is most frequently irregularly intermittent (*Fig.* 32), but may also be continuous (*Fig.* 33). While the general and nervous symptoms usually run parallel with the temperature, this is not always the case. It is not at all rare to see an amelioration of all symptoms at the height of the fever, and vice versa. The disease has no definite duration; it may last two or three weeks, or as many months. A prominent feature of epidemic cerebrospinal meningitis is the frequent occurrence of exacerbations of variable duration, during which there is a rapid rise in temperature, accompanied by headache, vomiting, irritability, and delirium. It is the frequent occurrence of these recrudescences that makes the duration so uncertain.

Three types of the disease have been described, namely, the fulminating or hyperacute, the ordinary or intermittent, and the subacute. The fulminating type begins suddenly with most intense symptoms, and ends fatally within twelve to forty-eight hours.

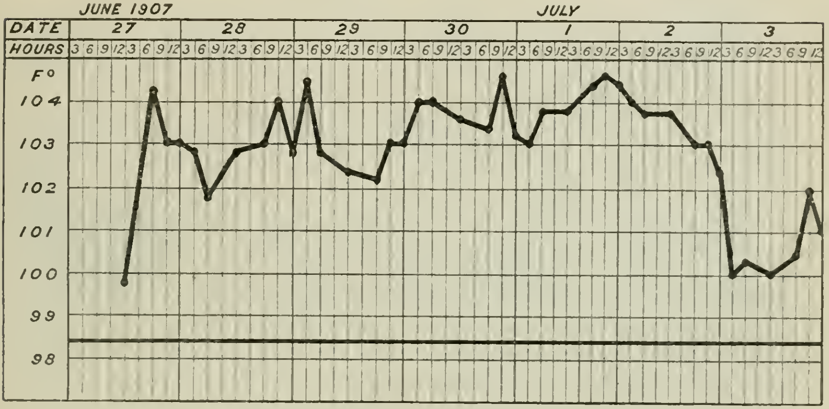

Fig. 32.—Epidemic Cerebrospinal Meningitis. Ordinary Temperature Curve.

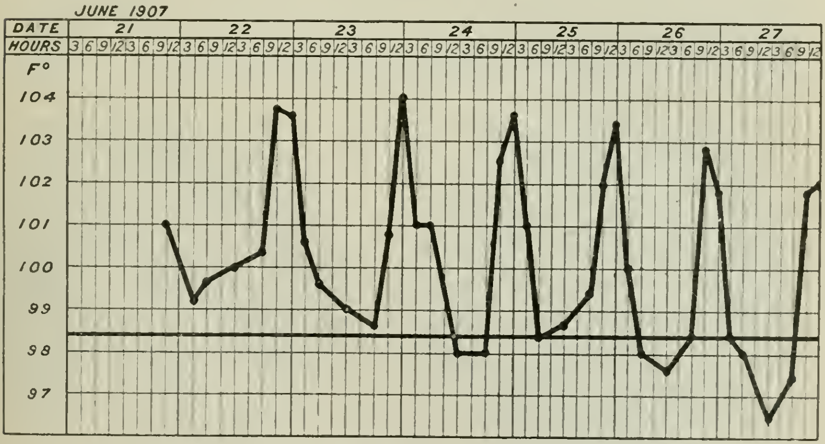

Fig 33. Epidemic Cerebrospinal Meningitis. Intermittent Temperature Curve.

The relative frequency of the prominent individual symptoms of the disease can best be seen from the following table, which is based on an analysis of fifty-four cases observed at the Mount Sinai Hospital in the children's service of Dr. Koplik, to whom I am indebted for the use of this material.

	Cases		Cases
Onset sudden in	51	Nystagmus	9
Convulsions	16	Photophobia	4
Vomiting	42	Petechiæ	7
Headaches	30	Labial herpes	10
Twitchings	16	Tache cérébrale	29
Babinski	30	Deafness	7
Kernig	37	Knee-jerks, normal	16
Macewen	38	,, exaggerated	29
Strabismus	28	,, absent	3
Facial paralysis	21		

Diagnosis.—A typical case is one easy of diagnosis. The clinical picture of sudden onset, with fever, headache, repeated vomiting, twitching, and hyperæsthesia, is one not often given by any other affection. However, puzzling cases in which most of these symptoms are absent are not at all rare. In these cases lumbar puncture is an indispensable procedure. I shall describe it somewhat in detail below, as its diagnostic and therapeutic importance merits extended consideration. The cerebrospinal fluid obtained on lumbar puncture gives us valuable diagnostic aid by its physical appearance, the character of its predominant cells (cytology), and the bacteria present. In this form of meningitis the cerebrospinal fluid is usually cloudy or purulent. A count of the cells present shows a predominance of the polynuclear leucocytes (73 to 98 per cent) (*Plate XI, Fig. B*) in contradistinction to that found in tuberculous meningitis, where the prevailing cells are of the mononuclear type (*Plate XI, Fig. C*). In other forms of acute meningitis, such as those due to the pneumococcus, staphylococcus, and streptococcus, the physical appearance and cytological character of the fluid is similar to that in epidemic cerebrospinal meningitis. It is the finding of the meningococcus in the spreads and cultures that offers us the only positive means of differentiating this form of meningitis from all other forms. The improvement in bacteriological technique in recent years has resulted in the more frequent finding of the meningococcus in blood cultures. Elser made these cultures in forty-one cases, with a positive result in ten. The results of other observers have not been so favourable. In most cases we can dispense with the blood cultures as a means of diagnosis, for the meningococci are readily demonstrable in the cerebrospinal fluid. Recently a new diagnostic aid has been proposed, which is based on the work of Sir A. E. Wright on opsonins. Houston and Rankin recently made sixty-three determinations on the opsonic index in cerebrospinal meningitis. They found that from the sixth day onward the opsonic index was four, and that it was a more delicate test of meningococcus infection than the agglutinative reaction. They think that this method will prove of value in the diagnosis of sporadic cases, and in settling the etiology of posterior basic meningitis. Taylor, working at the Great Ormond Street Hospital, arrived at practically the same conclusions.

Differential Diagnosis.—In the differential diagnosis we must take into consideration tuberculous meningitis, purulent meningitis due to other organisms, and meningism (as is occasionally seen in

PLATE XI.

EPIDEMIC CEREBROSPINAL MENINGITIS

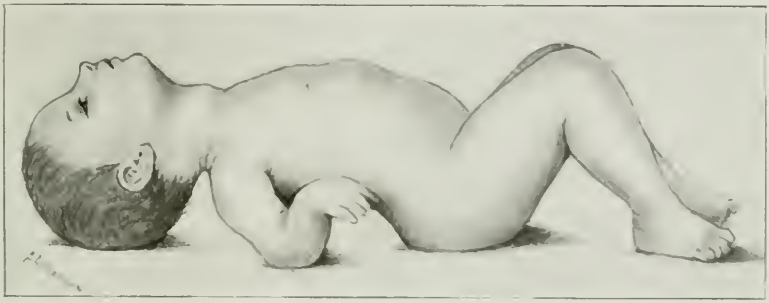

Fig. A. Cerebrospinal Meningitis. Rigidity of the neck. Opisthotonus. Characteristic position of the arms. (Koplik.)

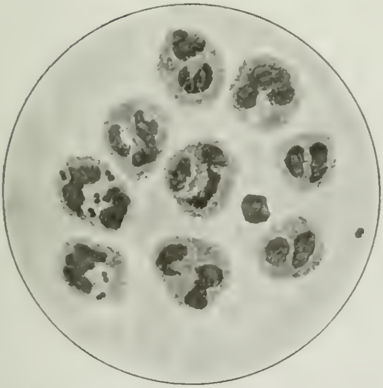

Fig. B.—Cytology of Epidemic Cerebrospinal Meningitis. Polynuclear cells. Meningococci.

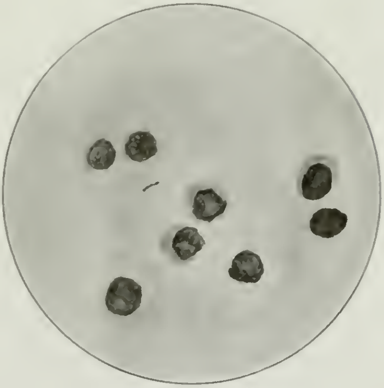

Fig. C.—Cytology of Tuberculous Meningitis (Specimen of Dr. E. P. Bernstein). Mononuclear cells. One Tubercle Bacillus.

typhoid fever, pneumonia, and other acute infectious diseases). Tuberculous meningitis has a gradual, often insidious onset. The symptoms of meningeal irritation, such as irritability, hyperæsthesia, rigidity of the neck, and opisthotonus are less severe ; the pulse and temperature are more markedly irregular ; focal symptoms, such as strabismus and facial paralysis, are more often present. The Babinski and Macewen signs are more frequently seen. The presence of choroid tubercles and tubercle bacilli in the cerebrospinal fluid are pathognomonic.

Purulent meningitis is secondary to other diseases, such as typhoid fever, pneumonia, influenza, or otitis, and to traumatism. The symptoms of meningeal irritation begin less acutely, and often after the primary disease has existed for some little time. In the cerebrospinal fluid the organisms of the primary affection can frequently be recovered. In traumatic meningitis the onset may be very violent. Meningism is also a secondary condition, occurring most frequently in apical pneumonia. Its course is rapid : the symptoms often disappear within a few days, leaving no complications on the part of the nervous system. Lumbar puncture yields clear fluid under increased pressure (15 to 20 cms.), in which no organisms can be demonstrated.

COMPLICATIONS.—Though the complications are not as numerous as in many other infectious diseases, they are of great importance, as they often concern vital portions of the nervous apparatus. Epidemics vary to an important degree in the frequency of their complications. Those which have been most often observed are marasmus, chronic hydrocephalus, deafness, optic neuritis and atrophy, spastic paralysis, and imbecility. Posterior basic meningitis (Still's disease), which was formerly considered a disease *per se*, is a complication of variable frequency of occurrence. It is seen most often in infants, in whom it may occur in epidemic form. The marked retraction of the head and neck, and the extreme degree of opisthotonus, are so striking, that a diagnosis of the condition can often be made from a distance. The pathological changes are found in the posterior part of the base of the brain. There are few recoveries. Most of the patients develop chronic hydrocephalus, and after lingering for months, ultimately die from marasmus.

PROGNOSIS.—The prognosis of epidemic cerebrospinal meningitis is one of the most uncertain in the whole field of medicine. Our usual prognostic criteria fail us in many cases. The temperature, the severity of the nervous symptoms, the character of the cerebrospinal fluid, and the degree of leucocytosis, are all of comparatively little value in foretelling the outcome of an individual case. A case may run a mild course for an extended period of time, when suddenly an acute exacerbation sets in and a fatal result rapidly follows. On the other hand, prolonged and even severe constitutional and nervous symptoms may quickly subside, and a complete recovery rapidly ensue. In general, however, it can be stated that during the period of infancy and early childhood the disease is frequently fatal (75 per cent), and that severe complications, such as posterior basic meningitis, are often present. The mortality varies in different epidemics from 30 to 75 per cent, and in some almost 100 per cent. On the whole, the prognosis in epidemic cerebrospinal meningitis is more favourable than that of other forms of acute purulent meningitis.

Prophylaxis.—On account of our insufficient knowledge of the mode of infection, it is difficult to formulate definite prophylactic measures. As it appears probable from recent researches that the organism obtains its primary lodgment in the tissues of the pharynx, and perhaps other parts of the upper respiratory tract, the thorough cleansing of the throat and nose should be instituted early in all cases. Not only should these measures be enforced upon the patients themselves, but also on all persons coming in intimate contact with these patients, for they may be the carriers of the disease germ. Strict isolation of the patient does not seem to be necessary, for, as I have said before, cases developing in hospital wards are almost unheard of.

Treatment.—Up to a very recent date very little advance has been made in the essential treatment of this disease. It was entirely symptomatic in character. I shall therefore give only a brief discussion of the ordinary treatment. **Rest** is as essential here as in other acute diseases of the nervous system. Early **Evacuation of the Bowels** is advisable. **Hydrotherapy** for the pyrexia is indicated as in other acute febrile diseases. The full warm bath has been found useful in some cases with marked hyperæsthesia and rigidity. **Chloral** and **Opiates** are useful in combating restlessness and delirium. I have never observed any beneficial results from the use of iodides. We must lay special stress on the **Proper Nourishment** of these patients, on account of the prolonged course of the disease in many cases, and the tendency to rapid emaciation. Fluid nourishment (milk, broth, beef-tea, etc.) is to be preferred. The patients should be fed at frequent intervals. If unable to take nourishment, gavage should be resorted to, for nutrition must be maintained at any cost.

This paper would not be complete without some consideration of the recent attempts to find a curative **Serum** for this disease. Jochmann and others have produced sera for which curative properties are claimed. Schöne reports twenty cases treated by Jochmann's serum, with a mortality of 28 per cent; those not so treated gave a mortality of 53 per cent. Wasserman, in a recent review of the literature, gives the results of the use of his serum; 102 cases were treated, of which only fifty-seven could be utilized for the purpose of estimating the value of this method of the treatment. Of these fifty-seven cases, twenty-seven died, a mortality of 47·3 per cent; fourteen cases were injected on the first or second day of the disease, giving a mortality of only 21 per cent; seven were injected on the third day, with a resulting mortality of 28 per cent. Four patients were similarly treated on the sixth and seventh day, and of these three died, giving a mortality of 75 per cent. In no case was any harmful effect observed from the injection of the serum.

Recently Flexner has produced a serum, with which I have treated two cases at the Mount Sinai Hospital. The first was a child one year of age, admitted to the hospital on the twenty-second day of the disease. A lumbar puncture was performed on the day of the admission, yielding a fluid in which the meningococci were readily found in smears. On cultures the meningococci grew rapidly. The next day, the twenty-third day of the disease, 32 cc. of cerebrospinal fluid were withdrawn. and 12 cc. of the serum injected (this being all the serum that was available to me at that time). A puncture on the next day yielded only a few meningococci, which failed to grow on the usual media. During the next two days 30 and 15 cc. respectively were injected, after the withdrawal of 10 cc. previous to each injection. In these fluids no meningococci could be demonstrated in smears or cultures. The white blood-count fell from 26,000 to 22,000, without showing any change in the differential count. This child died on the thirty-first day of the disease, with fully developed symptoms of posterior basic meningitis.

The second case, also one year of age, was admitted to the hospital on the fifteenth day of the disease, with a temperature of 104°. The next day 35 cc. of cerebrospinal fluid were withdrawn and 35 cc. of serum injected. Spreads and cultures yielded meningococci. No subsequent punctures were made, as they were not considered to be indicated on account of the favourable progress of the case. The temperature rose 2° six hours after the injection, dropped to the normal within twelve hours, at which level it remained during the subsequent course of the disease. The patient was discharged cured twenty-three days after admission. The white blood-count on the day of the injection was 31,000, with 61 per cent polynuclear leucocytes. Five days later it was 13,000, with 64 per cent polynuclears.

These cases are instructive from several points of view: (1) The injection of foreign serum into the subarachnoid space is apparently followed by no harmful results ; (2) The apparently bactericidal effect of the serum ; (3) The harmlessness of injecting more serum than the cerebrospinal fluid withdrawn.

The vaccine treatment, which is based on the recent work of Sir A. E. Wright, has not yet been sufficiently tested in this disease for us to estimate its therapeutic value.

Lumbar Puncture and its Indications.—Since Quincke's publication in 1891 of his masterly work on lumbar puncture, this procedure has become firmly established as an indispensable diagnostic and therapeutic measure, and has done more to place meningitis on a scientific basis than any other modern procedure. On accout of its great importance, I shall give a somewhat detailed description of the proper method of performing this minor operation. We aim to obtain the cerebrospinal fluid by entering the subarachnoid space, below the point where the spinal cord proper terminates, so as to avoid any injury to this important organ. It has been found that even in infants the cord does not extend below the level of the second lumbar vertebra, although the subarachnoid cul-de-sac extends below the fourth lumbar interspace. This fact gives us the selection of the proper site of puncture in infants, which should be in the fourth lumbar interspace, i.e., at the level of the highest points of the crest of the ilia. The patient should be placed on the left side in the horizontal position, at the edge of the bed or operating-table. An assistant should hold the patient by gently grasping the neck and legs, and by exerting moderate anterior flexion of the spine, separate the spinous processes, thus facilitating the introduction of the needle. I prefer the use of the original Quincke needle, to which I have added a movable flange-like guard (*Fig.* 34). This, set at the proper distance, i.e., 2 to 4 cm. in children and 4 to 7 cm. in adults, just previous to the puncture, prevents the needle from penetrating too deeply, and thus avoids the injury of the anterior venous plexus. It also helps to steady the needle after its introduction. The skin at the site of the puncture having been surgically prepared, and wet bichloride towels spread on the table and floor, the operator inserts the needle at an angle of 10° to the axis of the spine in the median line in children, and 5 to 10 mm. to the right in adults. When the needle is in the proper place, the stilette is removed and the conus inserted into the hilt of the needle, thus connecting the latter with the manometer by means of the tubing (*Fig.* 35). The

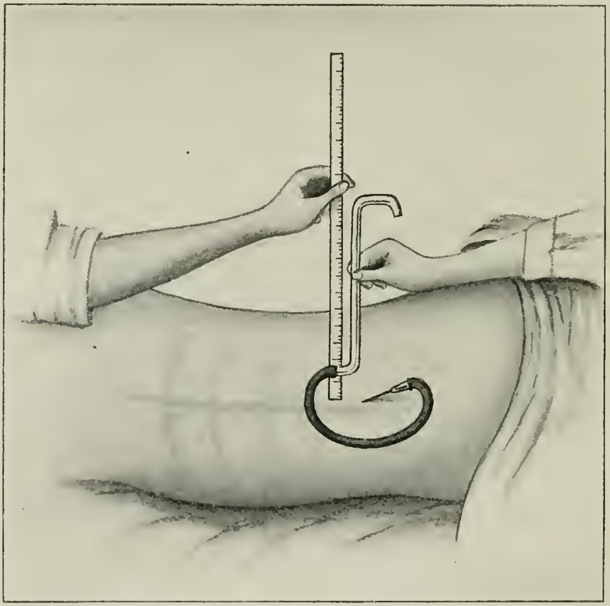

Fig. 34.—(After Quincke).—Measuring the pressure.

hydrostatic pressure is then measured. The fluid is allowed to flow into sterile test tubes by lowering the manometer. The withdrawal of the fluid should cease when the hydrostatic pressure is 3 to 5 cm., which is the normal pressure.

Our experience with lumbar punctures at Mount Sinai Hospital has led us to place the indications for its performance as follows: (1) Violent onset with convulsions, high temperature, chill, marked restlessness, hyperæsthesia, and cephalic cry; (2) Severe and persistent headaches ; (3) Persistent vomiting ; (4) Marked rigidity of the neck or opisthotonus ; (5) Marked delirium or coma, with dilatation of the pupils : (6) Marked bulging of the anterior fontanelle, or the presence of a marked Macewen sign.

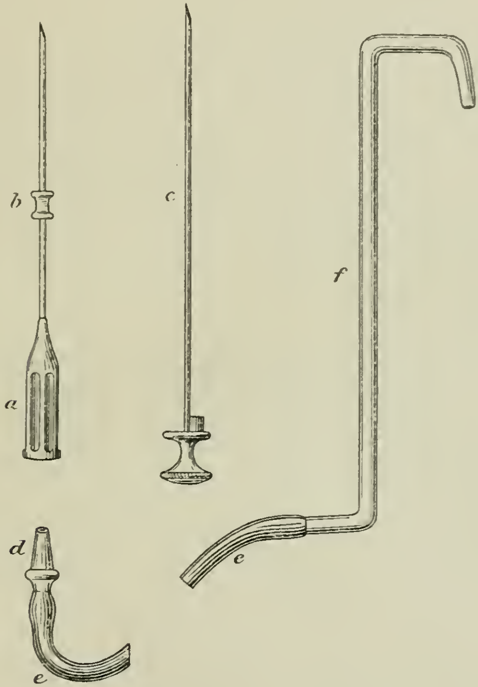

Fig. 35.—(After Quincke).—*a*, cannula ; *b*, guard ; *c*, stilette ; *d*, conus ; *e*. rubber tubing ; *f*, manometer tube. (Half the natural size.)

My thanks are due to Dr. Walter J. Heimann and Dr. S. Feldstein for assistance in the preparation of this paper.

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CEREBROSPINAL FEVER.

E. W. Goodall, M.D.

The following case of pneumococcic meningitis, which was clinically a case of cerebrospinal fever, was observed by Cook and McCleary.[1] The patient was a man, aged 24. The illness began on the evening of February 12, with headache and pain in the limbs. The patient vomited three times during the night. Next day he was "dull and heavy." During the second night he apparently had a fit. He was semi-comatose next day. There was a purpuric rash, chiefly on shoulder, chest, and back, but also on abdomen, arms, and legs, consisting of small purpuric patches and petechiæ. The only definite symptom pointing to meningitis was slight Kernig's sign. On February 15 the patient was worse, and there was right hemiplegia. He died on February 16. There was moderate pyrexia all through. Lumbar puncture had been performed, and the fluid was found to contain the *Diplococcus pneumoniæ*, but not the *Meningococcus*. An autopsy revealed meningitis and slight pneumonia.

It should be borne in mind that this disease may run a very rapid course to a fatal termination (fulminating cerebrospinal fever). In three cases observed by E. H. M. Milligan[2] at the Belfast Fever Hospital, the patients died after an illness of fourteen, fourteen, and twenty-two hours respectively. They were children; and the symptoms were coma (coming on very rapidly), convulsions, pyrexia, a rapid pulse, injection of the conjunctivæ, and a purpuric eruption. Muscular rigidity and Kernig's sign are not necessarily present. The diagnosis was confirmed by post-mortem and bacteriological examination.

Diagnosis.—The determination of the opsonic index in cerebrospinal fever was of distinct diagnostic value, according to the observations of T. Houston and J. C. Rankin,[3] in the Belfast epidemic. Among sixty-three cases they found that the index was over 4 in all except one examined from the sixth day onwards, while often it was over 2 in cases examined on the second day. When the index was 5, agglutination of the cocci was usually present.

Alice Taylor,[4] as the result of observations on eight cases of cerebrospinal meningitis in children, comes to the conclusions that it is probable that a high opsonic index is pathognomonic of the disease; that a normal index does not negative its presence: and that "to obtain the fullest effects from a vaccine or serum treatment, the strain of organism employed in its preparation is of great importance."

TREATMENT.—At a meeting of the Société Médicale des Hopitaux of Paris, held on October 19, 1906, Widal and Louis Raymond[5] reported a case in which it appeared that the injection of **Collargol** into the spinal canal had been the means of curing a woman, aged 31, who was suffering from cerebrospinal meningitis. The meningococcus having been found in the fluid obtained by lumbar puncture, 5 cc. of a 1 per cent solution of collargol was injected into the subarachnoid space. The improvement began five hours afterwards. At the same meeting a report of a similar recovery in a man was given by Prof. Dopter. Netter and other physicians (French and German) have recorded like cases.

A case of cerebrospinal meningitis treated by **Vaccination** with the specific organism is recorded by Rundle and Williams.[6] The case was a severe one, the patient being a child aged six months. The coccus was cultivated from the cerebrospinal fluid, which had been obtained by lumbar puncture. From this coccus the vaccine was made. Vaccination was performed five times, from the twenty-seventh to the thirty-first day. The patient recovered completely.

A somewhat similar case is reported by Hector Mackenzie.[7] The patient was a girl, aged 6. Lumbar puncture appeared to give relief.

REFERENCES.—[1]*Lancet*. Mar. 2, 1907; [2]*Brit. Med. Jour.* June 29, 1907; [3]*Lancet*, May 4, 1907; [4]*Ibid.* July 6, 1907; [5]*Ibid.* Jan. 12, 1907; [6]*Ibid.* July 27, 1907; [7]*Brit. Med. Jour.* June 15, 1907.

CHANCROID (Soft Chancre).

(*Index of Treatment*, *p.* 154)—Cleanse the sore with warm water, and apply **Iodoform.** If this is not successful, apply **Pure Carbolic Acid**, followed by **Antiseptic Lotions.**

CHAPPED HANDS.

(*Vol.* 1887, *p.* 68)—Two preparations for local use are as below: Tinct. Benzoini Co. ʒj; Glycerini, ℥ss; Tinct. Hydrastis, ʒij; Aq. Rosæ, ad ℥iv.

CHICKEN-POX. (*See* VARICELLA.)

CHILBLAINS.

(*Vol.* 1900, *p.* 131)—Many local applications are recommended: Linimenti Aconiti, ʒiss; Linimenti Belladonnæ, ʒiss; Tinct. Opii, ʒiij; Olei Lavandulæ, ♏x; Linimenti Saponis, ad ℥ij. To be applied night and morning. (*Vol.* 1889, *p.* 199)—Paint, in early stages, with Tinct. Iodi, 2 parts; Liq. Ammoniæ Perch., 1 part. Rub in **Tinct. Camph. Co.** and **Tinct. Belladonnæ**, equal parts, night and morning. When ulcerated dress with wet **Boric Lint** covered with oil silk. (*Vol.* 1892, *p.* 146)—Apply the following ointment two or three times daily: R Acidi Carbolici, ʒj; Tinct. Iodi, ʒj; Acidi Tannici, ʒj; Cerat. Simplicis ℥iv.

CHOLELITHIASIS.—(*See* GALL-BLADDER.)

CHOLERA.

J. W. W. Stephens, M.D.

M. A. Ruffer,[1] from a study of vibrios isolated from a number of patients at El Tor, arrives at results somewhat discordant with those hitherto accepted in the diagnosis of cholera. These vibrios were obtained from the stools of patients who had died at El Tor in 1905, but in whom no lesions resembling cholera were found in any case. Vibrios were found in thirty-eight out of 107 cases examined. Thirty-two of these vibrios did not agglutinate, but six agglutinated readily with cholera serum. Five of these six (one was avirulent and so could not be tested) gave a positive Pfeiffer's reaction, i.e., rabbits inoculated with cholera serum and any of these vibrios recovered or lived much longer than the controls.

In 1906 vibrios were found in eighteen cases of dysentery and colitis, which presented no lesions or symptoms of cholera. Two of these gave with cholera serum all the reactions of true cholera vibrios. As regards the agglutination reaction, the author gives a table, in which four out of fifteen vibrios isolated from cholera cases did not agglutinate with cholera serum, whereas seven out of twenty-three vibrios from patients who had no symptoms of cholera gave a positive agglutination reaction. The vibrios were now tested by the "saturation test" of Bordet, which is founded on the fact that an emulsion of a microbe added to the agglutinating serum of an animal previously injected with the same microbe absorbs most, if not all, of the specific agglutinins of the serum. The result was, that all the vibrios that agglutinated with cholera serum, whether obtained from cholera cases or not, absorbed the specific agglutinins. They were next tested by Pfeiffer's reaction *in vitro*. The result was again similar; all the vibrios that reacted to agglutination with a cholera serum also reacted to this test. They were now further tested by the "fixation test" of Bordet. This depends upon the following facts: If an animal be injected with a microbe, e.g., cholera, a serum containing an "immune body" (amboceptor) is obtained. If this, heated previously to 56° C., be mixed with the cholera vibrios, the immune body is absorbed. If now fresh normal serum containing alexine or complement be added to this mixture, the complement is absorbed, so that none remains free in the mixture. If now, after some hours, there are further added blood corpuscles and a serum (immune body or amboceptor) (heated to 56° C.), got by injecting blood corpuscles into an animal, nothing happens if there is no free complement in the previous mixture; but if the cholera vibrios have not absorbed the immune body, the complement also not being absorbed remains free in the liquid, and is now absorbed by the blood-cell mixture, with the result that the blood cells are immediately laked. We have thus a means of detecting whether the vibrios are identical with those (viz. cholera) used for preparing the immune serum. The result of this was to show that there is no agreement between the two previous tests and this one, for fourteen out of twenty-four vibrios not agglutinated by cholera serum fixed the immune body of the same serum, while six that were agglutinated, and that reacted to Pfeiffer's test *in vitro*, did not absorb the immune body. There is yet another test, the "hæmolysis test." Certain vibrios, when made into an emulsion with salt solution, on the addition of washed red corpuscles, hæmolyse the latter. It was found by this test that *no* vibrio produced hæmolysis of the red cells when the agglutination test, Pfeiffer's reaction, and the fixation test were positive: but the vibrios isolated from dysentery cases (El Tor vibrios) were strongly hæmolytic, and also did not fix the immune body. The author considers these last two tests as important as the former; and, consequently, that any one test or group of tests is insufficient to establish a true classification. These El Tor vibrios, therefore, can be separated from true cholera vibrios, although several of the reactions of both are similar.

N. H. Choksy[2] recommends the following method of treating cases of cholera:—

Germicidal.—**Cyanide of Mercury** in doses of $\frac{1}{10}$ gr. with simple syrup and water made up to one ounce, every two or three hours, according to the stage of the disease and frequency and character of the motions. It exercises a marked influence on the stools. The only drawback to its use is stomatitis during convalescence; but by carefully graduating the dose this can generally be avoided.

Enteroclysis.—One pint of **Normal Salt Solution** cooled to 100° F. is administered at intervals of four hours. A soft rubber tube is inserted for 10 to 12 in., the salt solution reservoir is raised four or five feet above the bed, and the hips are well elevated. This treatment is not possible where the frequency of the stools is great, but is of great utility in the advanced and collapse stage.

Maintenance of Circulation and Re-establishing of the Kidney Functions.—

℞	Caffein. Sod. Salicyl.	gr. iiss	Liq. Atropinæ (B.P.)	♏j
	Spartein. Sulph.	gr. ss	Spiritus Vini Gal.	ad ♏xx

20 minims in 1 oz. water every two, three, or four hours,
according to the state of the pulse.

In addition, hot-water bottles, foot and body warmers, sinapism to the calves, friction of the limbs with dry ginger powder, hot linseed poultices to the abdomen and loins, poultices of digitalis leaves, dry cupping, are all of service in maintaining the circulation and function of the kidneys.

Nourishment.—Hot black coffee without sugar and without milk is given day and night as often as the patient desires. As soon as the stools change, thin arrowroot, then a little milk, then biscuit, rice, and milk, etc., as the acute symptoms subside.

Stage of Reaction.—If the previous treatment has been carried out, this stage is generally not well marked. An alkaline mixture, containing **Sodium Bicarbonate, Citrate of Potash,** tinctures of **Digitalis** and

Nux Vomica, should be given; if there is delirium, **Bromides** with tincture of **Hyoscyamus** are indicated, or even morphia.

Symptomatic Treatment.—Persistent vomiting is controlled by **Cocaine Hydrochloras** $\frac{1}{8}$ gr. in a teaspoonful of water, or **Mist. Pepsini Co.** cum **Bismutho** (sine opio), in 10-min. doses every quarter or half-an hour, until four doses have been administered. Prostration is treated by hypodermic injections of **Camphor** (camphor 2, sulphuric ether 3, and olive oil 7 parts) in doses of 20 min. every two to three hours. **Dry Cupping** is especially useful, and may be freely used.

The mortality by this treatment was 51 per cent instead of 89 per cent, taking into account cases practically moribund when first seen.

REFERENCES.—[1]*Brit. Med. Jour.* Mar. 30, 1907; [2]*Lancet,* April 20, 1906.

CHOREA.

Prof. G. F. Still, M.D., F.R.C.P.

Wood,[1] in a study of 223 cases of chorea, found that 154 were girls, 69 boys. The youngest case in his series was aged four years, and indeed it is very rarely seen below this age, but Mackenzie[2] has recorded a case in which chorea began at two years. In 18 per cent of Wood's cases there was a definite history of antecedent rheumatism; 48 per cent were left with some cardiac lesion. His series illustrated the point which has often been observed, that when chorea kills, it almost always kills by producing heart disease of severe type; the two cases which died had pericarditis; only one had rheumatic nodules. As to the frequency of cardiac complications in chorea, the statistics of other observers show similar results. Thayer,[3] in 808 cases of chorea, found cardiac murmurs in 41 per cent, and more than half of these cases with bruits were thought to have organic heart disease.

It is clear that, apart from the risk to life, chorea has very serious results; but there are other rare complications. For instance, Simon[4] records the case of a girl, aged twelve years, who became hemiplegic during chorea, and also aphasic; the paralysis was still present five months later, as also was the speech affection; he regarded the condition as the result of embolism from latent endocarditis.

Wood insists very rightly on the harm done by punishing such children for their supposed fidgetiness at school. They should, of course, be removed from school directly the chorea makes its appearance.

TREATMENT.—Bruel[5] considers that the degree of **Isolation** and of **Rest** may be varied according to the severity of the case, and divides the treatment into four degrees of completeness: (1) Going to bed early and rising late, so as to spend fourteen hours in bed; (2) Going to bed also for two hours in the middle of the day; (3) Absolute rest in bed for a fortnight, with very little visiting by relatives; (4) Darkening of the room except at meal-times. He thinks some advantage may be obtained from the use of **Blue Light.** Jones, who communicates this abstract of Bruel's advice, reports also Porot's[6] observations on the value of **Arsenic** in chorea. Good results are obtainable only with large doses of Fowler's solution. **Sodium Arsenate** has also been used. **Cacodylate of Sodium** has been given hypodermically in a strength of 3 per cent. It has, however, been known to produce neuritis, and also skin eruptions. **Arrhenal,** which is methylarsenate of sodium, has the advantage of producing no digestive disturbance. **Arsenical Butter** has also been used with success. Wood (loc. cit.) mentions **Aspirin, Salicin,** and **Antipyrin** as all valuable at times, and considers that **Chloral** is of great value in severe cases.

REFERENCES.—[1]*Intercol. Med. Jour. of Austral.* in *Brit. Jour. Child. Dis.* June, 1907, p. 266; [2]*Antiseptic,* May, 1906, in *Brit. Jour. Child. Dis.* July, 1906, p. 319; [3]*Jour. Amer. Med. Assoc.* June, 1906, in *Brit. Jour. Child. Dis.* Feb. 1907, p. 66; [4]*Ann. de Méd. et Chir. Inf.* in *Pediatr.* July, 1906, p. 464; [5]*Rev. Mens. des Mal. de l'Enf.* June, 1906, in *Brit. Jour. Child. Dis.* Jan. 1907, p. 33; [6]*Gaz. d. Hôp.* June, 1906; *Ibid.* Feb. 1907, p. 82.

CHYLURIA. (*See* URINE.)

COCCYGODYNIA.

(*Vol.* 1903, *p.* 205)—Treat in the acute stage with rest in bed, **Morphia Suppositories, Hot Fomentations** locally, and **Aperients.** In chronic cases, **Excision** of the coccyx alone gives relief.

COLIC.

(1) *In Early Infancy.* Correct diatetic errors; the commonest being too frequent feeds. For an infant of two months ℞ Tinct. Camph. Co., ♏ij; Spt. Menth. Pip., ♏¼; Syrupi Simplicis, ♏xv; Aq. Anethi, ad ʒj. To be given for the relief of the paroxysms. (2) *In Older Children.* Enquire for a history of improper food, and exclude intussusception. Give **Ol. Ricini,** ʒj. and order hot fomentations to the abdomen. After the bowels have acted, give **Pulv. Cretæ Cremat.,** gr. v, every four hours (for a child of two years).

COLITIS.—(*See* INTESTINES, DISEASES OF.)

COLON (Idiopathic Dilatation of).

Robt. Hutchison, M.D.

The clinical features of this condition comprise: (1) A history of constipation from birth or from the earliest recollection, which is compatible, however, with fairly good health, until the final stage is at hand, the first sign of failure being often a loss of weight; (2) A constipation which often alternates with diarrhœa, and which at its worst is unlike that of obstruction, inasmuch as flatus is often passed and fæcal matter may be drained away through a rigid rectal tube: (3) Abdominal enlargement, variable or constant, often asymmetrical, with prominence in the left iliac region, the abdomen, though distended, being seldom tense and often surprisingly flaccid, and rarely presenting any impairment of resonance; (4) Slow alterations in shape, especially in the left iliac region, observable only with patience, quite unlike the tense peristalsis seen in real obstruction; (5) The absence or rarity of pain and vomiting. Neither with real intestinal obstruction nor with simple non-dilating constipation should there be any confusion when this condition is far advanced. The difficulty lies in distinguishing its early stage from a simple constipation, and in recognizing the point at which the case must pass from physician to surgeon.

Hawkins[1] discusses the explanations of the pathology of the condition which have been put forward, and concludes: (1) That the purely anatomical explanations of "valve formation," "folding," or "kinking" are insufficient; (2) That the "neuropathic" theory admits of no proof.

The evidence seems to show that one has to deal with a congenital "physiological obstruction," the result, possibly, of a neuro-muscular defect in consequence of which a section of the colon is incapable of forwarding its contents. The defect is inborn, and not the result of the abuse of aperients or enemata. He regards idiopathic dilatation as merely an extreme degree or result of congenital constipation, and as in no way to be distinguished from a similar dilatation which may result from the same cause in later life. The nervous element in the causation is apparently generally paralytic, but occasionally it may be spastic.

In most cases the dilatation is found to begin above the rectum, but the lower two or three inches of the pelvic colon may be unaffected. The enlargement is rapid, but it is never abrupt. The maximum dilatation is often reached in a distance of three or four inches, and this section of the bowel may be likened to a funnel, or to the neck and shoulder of an inverted bottle. The size reached may be enormous. A diameter of 6 in. is not uncommon ; one of 8 in. has been recorded. As a rule the loop shape of the pelvic colon is preserved, and this part rises entirely out of the pelvis, the anterior surface of its mesentery becoming posterior, with the butt end of the loop lying at or above the umbilicus, and sometimes actually under the right costal margin.

As regards the rest of the colon, the condition varies. Occasionally it is normal in all respects, and the dilatation subsides as the pelvic colon merges into the fixed iliac colon. The upper end of the pelvic loop or bag is then shaped like the lower end. This pure pelvic dilatation is uncommon, and occurs only in young children. Far more commonly the rest of the colon is also affected in some degree. Often the dilatation reaches to and fades away in the iliac or descending colon. But in some cases it is continued uniformly onwards up the descending colon, and ceases gradually in the transverse or ascending colon, only in rare instances reaching the cæcum. In these extreme cases the abdominal distension is by itself a danger to life. Interference with respiration is the common result. In rare cases hydronephrosis has been noted, and occasionally œdema of the lower extremities due to pressure on iliac veins. Tetany has been known to occur, and, as in the case of dilatation of the stomach, it requires immediate operation.

The small intestine is never dilated. It is found to be small, collapsed, empty, and grey, and it is generally gathered into an inconspicuous central handful lying on the vertebral column buried beneath the colon.

The dilatation of the colon is clearly the work of time, for in nearly every case there is great hypertrophy of muscle. The dilatation and hypertrophy are associated together from end to end of the affected part of the bowel. One cannot doubt that the hypertrophy is a secondary compensatory development, an *arbeitshypertrophie*. In cases in which life is prolonged for many years, no doubt this hypertrophy is for a time sufficient to counterbalance the paretic or spastic section of bowel below, but a relative insufficiency must set in sooner or later. The circular muscular coat may be three times as thick as the longitudinal tænia, and the whole wall may have a thickness of ¼ in. The bowel is thus rendered abnormally rigid, and on puncture it shows very little tendency to collapse. Thickening of the mesentery is rare, and so also is stercoral ulceration.

Treatment.—As the condition of patients suffering from this disease is always precarious, surgical treatment is to be recommended in all old-established cases. An anastomosis should be established between the ileum and the lower end of the pelvic colon, with or without fixation or partial excision of the dilated portion of the bowel.

Morley Fletcher and Betham Robinson[2] report another case of the disease in a boy of twelve, in whom very great improvement resulted from a laparotomy and squeezing out of the contents of the bowel per anum by gradual pressure from within the abdominal cavity. After the operation the bowel could be kept acting by aperients. They recommend that this plan should be given a trial before proceeding to more serious operations.

References.—[1]*Brit. Med. Jour.* Mar. 2, 1907 ; [2]*Ibid.* Feb. 16, 1907.

CONJUNCTIVA, DISEASES OF.

A. Hugh Thompson, M.D.

Bacteriology of the Conjunctiva.—An investigation into some of the more unusual forms of acute conjunctivitis from the above point of view was undertaken by Hudson and Panton.[1] It is well known that the majority of cases of acute conjunctivitis are due to one of three organisms, viz., the Koch-Weeks bacillus, the Morax-Axenfeld diplobacillus, and the gonococcus. The types of inflammation resulting from each of these are in most cases associated with well-known clinical features—the Koch-Weeks with the common mucopurulent conjunctivitis which among the class generally seen in the out-patient departments at hospitals in London goes by the name of "the blight"; the diplobacillus with "angular" conjunctivitis, generally subacute; and the gonococcus with acute purulent conjunctivitis, whether occurring in the adult or the newly-born infant. Cases due to the first two of these organisms were excluded from the investigation, but some of the acute purulent variety were included. It is worth noting that the gonococcus is not so invariably associated with ophthalmia neonatorum as is sometimes supposed. Out of twenty-two cases, it was found in eighteen. In four it was found neither in the films after a prolonged search, nor in the cultures. Apart from the gonococcus, the organisms met with were, in order of frequency, a diphtheroid bacillus (60 times), a white staphylococcus (28 times), the *Staphylococcus aureus* (24 times), a streptococcus (10 times), an intermediate staphylococcus (3 times), the diphtheria bacillus (twice), and an unclassified coccus (once). Of the ten cases in which streptococci were found, they were considered to be the causative factor in nine, and these include some of the most severe cases met with in the series (among them two cases of ophthalmia neonatorum). The cases where *Staphylococcus aureus* was the culprit were also mostly severe in type (15 out of 19). As to the

Staphylococcus albus, it is doubtful whether it can ever give rise to an acute conjunctival infection. Randolph[2] believes that this organism is not only an invariable inhabitant of the normal conjunctival sac, but that it may antagonize those organisms which are pathogenic to it, by rendering the soil unfavourable for their growth. This view is, however, not accepted by Hudson and Panton, for out of the twenty-eight cases in which this organism was found, they conclude that it was responsible for the inflammation in no less than sixteen, though, it is true, these cases were almost all of a mild type. With regard to diphtheroid bacilli, in the great majority of cases in which they are found they are probably of no importance, but in eleven out of sixty cases in which they were present, no other cause of inflammation could be discovered. The suggestion is, that there are probably several species of diphtheroid bacilli, and that some of them possess properties pathogenic to man. The true diphtheria bacillus was only met with twice. It is distinguished by the fact that it acidifies litmus-dextrose broth in twelve hours at 37° C., a test which it is advisable to apply in cases of doubt as to whether or not to administer anti-diphtheritic serum.

It is worth noting that not a single case of pneumococcal conjunctivitis was met with in this series, a fact which contrasts strangely with the experience of Harrison Butler[3] in Jerusalem, who found that in the acute ophthalmia which is so common there, with the exception of the Koch-Weeks bacillus the pneumococcus was the organism of most frequent occurrence.

TREATMENT.—The relative merits of the different salts of silver in acute conjunctivitis are discussed in another article (EYE, GENERAL THERAPEUTICS OF). It will be enough here to mention the treatment carried out at the two London hospitals (Moorfields and St. Thomas's) from which the writers of the article in the *Lancet* obtained their material:—

"In those cases in which the conjunctival inflammation was not associated with membrane formation or ulceration of the lids, the conjunctiva was brushed over daily with a solution of **Silver Nitrate,** usually of the strength of 5 gr. to the ounce, and the conjunctival sac was washed out every four to six hours with some antiseptic lotion: perchloride of mercury 1–10,000 appeared to be the most satisfactory for this purpose. Where membrane formation was present, a 20 per cent solution of **Argyrol** was used, and was found to have no tendency to produce extension of the necrotic process, such as has been observed in cases of this type after the use of silver nitrate. When there was an associated infection of the skin of the lids or their margins, without corneal lesions, the application of **Boric Fomentations** to the lids, by bringing about a rapid restoration of the skin to a healthy condition, was found to act as a valuable adjuvant to the treatment of the conjunctival sac."

In the case of gonococcal conjunctivitis, in addition to douching, and treatment by one or other of the silver salts, De Schweinitz[4] recommends **Iced Compresses** for the first thirty-six hours in the adult. By this means the temperature of the conjunctival sac can be reduced to 92° C., at which temperature there is an undoubted retardation of the growth of gonococci.

Trachoma and Race.—After a careful review of the literature, Bordley[5] is not convinced that any case has been recorded of trachoma in the American negro. He records three cases in which trachoma was diagnosed in negroes, but in none of them were there trachoma granules, in none of them did pannus develop, and in none did the disease leave behind any scarring of the lids, so that he concludes the original diagnosis was wrong in all three cases.

REFERENCES.—[1]*Lancet*, July 16, 1907; [2]*Johns Hop. Hosp. Bull.* Oct. 1906; [3]*Royal London Ophth. Hosp. Rep.* vol. xvii. Part I; [4]*Ther. Gaz.* Jan. 1907; [5]*Johns Hop. Hosp. Bull.* Feb. 1907.

CONSTIPATION IN CHILDREN.

(*Vol.* 1889, *p.* 208)—Suspect an ill-proportioned diet, and supply plenty of fluid for drink in addition to fluid foods. A teaspoonful of **Simple Syrup** three or four times daily just before food may be given to breast-fed babies. Give instructions for **Massage** along the course of the large bowel. **Glycerin** injections up to ʒj are useful (also small suppositories of glycerin). In the same article several prescriptions are given: ℞ Tinct. Nucis Vom., ♏ss; Tinct. Belladonna, ♏x; Infusi Sennæ, ♏xx; Infusi Calumbæ, ad ʒj. To be given thrice a day at first, then twice, or once only. ℞ Ext. Casc. Sag. Liq., ♏xx; Tinct Belladonnæ, ♏x; Glycerini, ʒss, Aquam, ad ʒij. To be taken every morning. Sodii Sulphat., gr. v to x; Quinin. Sulphat., gr. ¼; Tinct. Nucis Vom., ♏ss; Acid. Sulph. Aromat., ♏j; Aq, ad. ʒj. To be given three times daily (for a child of six months).

CONVULSIONS, INFANTILE.

Prof. G. F. Still, M.D., F.R.C.P.

Mothers often speak of "inward convulsions." According to McIlraith,[1] this term is applied to an attack in which the child goes quite still and somewhat stiff, becomes pale about the face and lips, turns its eyes up, and appears to be unconscious; sometimes the thumbs are clenched in the palms of the hands; the whole attack usually lasts about a minute, and is not accompanied by clonic convulsions, except perhaps some twitching of eyelids and the muscles of the face. On the significance of these attacks there is some difference of opinion. It has been suggested that they are syncopal attacks due to colic, or are analogous to *petit mal*, or are the result of pressure of a gas-distended stomach upon the heart, or are only the slighter manifestation of what may run on into general convulsions. McIlraith holds that the majority of such attacks are not truly convulsive, but expresses no opinions as to what their nature is, if not convulsive.

He finds that convulsions are rather commoner in boys than in girls. They occur most often in the first year, and especially in the first month. Heredity he regards as a more important predisposing factor even than rickets; in the families of 835 adults with epilepsy, there were 159 children, and out of these 108 had convulsions. Some neuropathic taint was present in the family history of 57 per cent of children with convulsions. Out of 250 cases, a marked history of alcoholism in the parents was obtained only in 9, and of syphilis in 29. Ill-health in the mother during pregnancy was noted in 101; McIlraith thinks that this cause acts by influencing the nutrition of the child. In 24 cases the child was premature. Rickets was present in 94, but in 25 out of these 94 cases there was also a history of neuropathic heredity. The importance of rickets as a cause of convulsions is liable to be exaggerated. Amongst 100 cases only ten gave a history of convulsions. McIlraith's observations confirmed the observation made by the present writer that the stress of rickets may fall on different tissues in different children: in one child it may affect chiefly the osseous system, in another chiefly the nervous; in this series of rachitic children it was found that convulsions rarely occurred in children with extremely marked rachitic changes in the bones. It would seem that in these cases the toxin to which rickets may be due had spent itself on the osseous system and spared the nervous. Some gastro-intestinal disturbance was present in 43·2 per cent of the cases, but the relation to hand-feeding was by no means marked; out of 132 children who had convulsions in the first year of life 44·7 per cent were breast-fed, 55·3 per cent were bottle-fed; unfortunately it is not stated how often convulsions were observed in an infant who was still on the breast. Several other factors are discussed, but the above are the most important. The relation of any of them to convulsions is, however, difficult to estimate, for often there are several factors present: For instance, a child with gastro-intestinal disturbance producing convulsions may also have rickets and a neuropathic inheritance. Probably the conclusion is justified that neuropathic heredity is the most potent predisposing factor in the production of infantile convulsions, and that the next in importance is rickets.

The exciting causes of convulsions are too numerous to mention. Almost any local external or internal irritation may start a convulsion in an infant or child predisposed thereto. Eustace Smith[2] has recently drawn attention to the occurrence of convulsions upon the taking of food. There was no sign of abdominal discomfort, and no indication of any uneasiness between the end of the meal and the beginning of the convulsion. In one such case he watched the infant to see if it were really so; the infant was fed, and two minutes later was seized with a convulsion in which it ceased to breathe, and in spite of artificial respiration died within thirty seconds after the onset of the attack. Magi[3] records the case of a girl aged six years in whom convulsions were stopped at once by evacuation of five round worms. Guthrie,[4] whilst admitting that convulsions may occur during dentition, points out that they are far more common below than during the teething age.

Prognosis.—Convulsions in infancy are always serious, but a fatal result is certainly very uncommon. One of the most important questions is their relation to epilepsy. As McIlraith points out, they may be the first signs of that disease, but the great majority of children who have convulsions in early life never suffer from epilepsy. He found that of seventeen children who had suffered with convulsions before two years of age, seven, seen several years later, seemed to be epileptic. Keeling[5] found that amongst 150 cases of epilepsy sixty-five showed a history of convulsions in infancy, but this writer's series of cases include convulsions of various causation, and with no evidence that they were other than reflex convulsions; and many of them would certainly not have been described by most writers as epilepsy. Moon[6] found that 40 per cent of children with convulsions showed continuance of the attacks, presumably epileptic. My own experience certainly would not confirm any of these statistics; it has been quite exceptional for cases of infantile convulsions to become epileptic subsequently so far as I have observed. Nor can I confirm the observations of Thiernich and Birk,[7] who found that two-thirds of children who had convulsions were below the average in intelligence or morals, and that only a very small proportion of infants who had convulsions developed into normal children.

TREATMENT.—Kerley[8] recommends placing the infant at once in a warm **Mustard Bath** (a heaped tablespoonful of mustard to 6 gallons of warm water) at a temperature of 105° F. The legs and arms are to be briskly rubbed while the child is in the bath. After consciousness is recovered, the infant is to be kept very quiet, an icebag or cold cloths are to be applied to the head, and a hot bottle to the feet. If the bath fails to stop convulsions, **Chloroform Inhalations** should be given, and the bowel evacuated by an enema, after which **Sodium Bromide** (8 gr.) with **Chloral** (3 gr.) may be given to an infant under one year of age as a rectal injection. For an infant over one year the doses may be respectively 10 to 20 gr. and 3 to 5 gr. He considers that morphia is rarely to be used, and not unless other measures fail. It should not be given at all to an infant under six months, and to an infant of six to twelve months, $\frac{1}{50}$ to $\frac{1}{40}$ gr. may be given hypodermically.

REFERENCES.—[1]*Med. Chron.* Jan. 1907; [2]*Brit. Med. Jour.* vol. i, p. 1338, 1906; [3]*Gaz. deg. Osped.* Feb. 1906, in *Pediatr.* Mar. 1907, p. 193; [4]*Pediatr.* April, 1907, p. 229; [5]*Brit. Jour. Child. Dis.* April, 1907, p. 137; [6]*Lancet,* Sept. 15, 1906; [7]*Jahrb. f. Kinderh.* vol. 65, No. 1, in *Pediatr.* June, 1907, p. 388; [8]*Treatment of Diseases of Children,* Saunders & Co. 1907.

CORNEA, DISEASES OF.

A. Hugh Thompson, M.D.

Transplantation of the Cornea.—Some of the saddest cases that one ever comes across in ophthalmic practice are those of double opaque corneæ, because in many cases one knows that the essential parts of the ocular mechanism are intact, and yet remain useless from the lack of a transparent window to admit light from the outside world. Up to the present, however, no attempt to transplant a transparent cornea to replace an opaque one has been reported which has proved to be a permanent success, if we except a remarkable case recently recorded by Zirm, of Olmütz.[1]

The case was that of a man of forty-five, who had been blinded for more than a year by a quantity of slaked lime, which had rendered both corneæ opaque. He was taken into the hospital, and had to wait some time before a suitable case for excision occurred. In a few weeks, however, it was found necessary to excise the eye of a boy of eleven, who had a particle of iron in his globe which it was found impossible to extract with the magnet. Immediately after excision the globe was immersed in warm normal saline solution, and at the same time the blind patient was put thoroughly under chloroform. Now with Hippel's clockwork trephine with a 5 mm. crown a disc was removed from the cornea of the excised eye. With the same trephine a corresponding disc was removed from the patient's right cornea, and the transparent disc placed in the gap, and kept in place by a bridge of conjunctiva stitched over it. A similar procedure with a second transparent disc from the excised eye was adopted for the patient's second blind eye (the left one) at the same sitting. A week later the graft in each eye was clear, but shortly afterwards that in the right eye began to give trouble, and had to be removed. That in the left, however, remained transparent, so that six months later (in June, 1906) it was quite possible to examine the disc with the ophthalmoscope. The patient's vision was $\frac{3}{20}$, and he was able to perform such work as feeding and attending to cattle.

This is a far more successful result than has ever been previously attained. In Zirm's opinion the points that made for his success were: (1) The youthfulness and healthfulness of the eye from which the graft was taken; (2) The persistence of some parts of the original structure in the cornea into which the graft was inserted; (3) Accurate apposition ensured by the use of the one trephine; (4) The manipulation of the transparent disc with small, warm, moist pads, without the intervention of fingers, forceps, or scissors, and without the use of antiseptics, normal saline being the only solution used; and (5) The induction of general and deep anæsthesia, as the slightest movement on the part of the patient might have imperilled success.

Vaccination of the Cornea.—An interesting case is reported by J. A. Menzies and W. E. Jameson,[2] the latter of whom inadvertently performed the following experiment upon himself:—

On February 27th, 1906, he was breaking a tube of Chaumier's lymph, when a fragment of the tube flew into his right eye. The eye was promptly washed out, and there was no further discomfort till March 4th, when there was some indistinctness of vision due to monocular diplopia. Vision, nevertheless, was $\frac{6}{6}$, and nothing abnormal appeared on examination. On the following day there was a small, circular area, the size of an ordinary pin-head, bare of epithelium in the lower outer quadrant of the cornea. For three days this area gradually increased in extent, till it occupied one-fourth of the total area of the cornea. There was no infiltration of the corneal substance, but considerable conjunctival injection. On March 9th chemosis and œdema of the lids became marked, and about this time and for several days the pre-auricular gland was enlarged and tender. The chemosis and œdema remained at their maximum till March 15th, and then during the following ten days slowly diminished, but during all this time the denuded area of the cornea remained bare of epithelium. Finally, on March 25th, the epithelium began to spread over the exposed corneal surface. Growth took place chiefly from above and below, very slightly from the sides of the patch. As compared with regeneration after injury, the rate of progress was slow, and it was March 30th ere the process was complete. Although no infiltration or loss of the corneal substance had been observed, the regenerated epithelium had a "matt" surface. Unfortunately, recovery was retarded by the occurrence of a secondary ulceration of the affected area. On April 20th the spot became infiltrated, and an ulcer developed which showed no definite sign of healing for about three weeks, and is largely responsible for the impairment of vision. By May 10th, however, the ulcer was healing satisfactorily, and the patient was able to resume work on June 13th, although the eye continued weak, and dark glasses had still to be worn for a time. During the acute stage the pupil never dilated fully with atropine, and there was a considerable amount of iritic pain, but there was no exudation or synechia. On June 29th vision was J. 14 (letters), on September 7th it had improved to $\frac{6}{36}$, on September 25th $\frac{6}{24}$, (one letter), and now (December 13th) it is $\frac{6}{18}$.

Keratitis in connection with Acne Rosacea.—Several cases of this affection have been noted in the literature of the past year,[3] and it is probably not very uncommon. One well-marked case has recently been under the care of the present writer. It occurs in middle-aged patients whose faces are affected with acne rosacea. It is a sub-epithelial inflammation of the cornea, causing superficial ulceration just as phlyctenular keratitis does. The effect of treatment is apt to be only temporary, as relapses are very common as long as the condition of the face persists. Treatment must therefore be directed primarily to the cure of the acne rosacea itself by resorcin (5 per cent ointment) or zinc and calamine lotion. The bowels and digestion must be attended to, and for the local condition atropine ointment is generally advisable.

REFERENCES.—[1]*Graefe's Arch. f. Ophthalmol.* vol. lxiv. part 3, *Ophth. Rev.* Jan. 1907; [2]*Brit. Med. Jour.* Jan. 26, 1907; [3]*Trans. Ophthalm. Soc.* 1906, p. 47, *Ophthalm.* Oct. 1906, and Jan. 1907.

CORYZA.

(*Vol.* 1899, *p.* 217)—10 grains each of **Dover's Powder** and **Phenacetin** are mixed, and divided into two doses. The patient takes the first, has a hot bath and a hot lemonade or rum punch, followed by a dry hot pack (in blankets). The second dose is then given, and after an hour's sweating, the skin is dried, and the patient goes to bed. Various snuffs are recommended; for example: ℞ Subnitrate of Bismuth, ʒj; Powdered Camphor, gr. x; Boric Acid, gr. xxx; Morphine Hydrochlorate, gr. j; Cocaine Hydrochlorate, gr. j; Powdered Benzoin, gr. xv. ℞ Morphine Hydrochlorate, gr. ij; Pulv. Acaciæ, ʒij; Bismuth Subnitrate, ʒvj. (To be used sparingly.) ℞ Menthol, 1 part; Salol, 4 parts: Boric Acid, 16 parts.

COUGH.

The irritable cough of pharyngitis and laryngitis is checked by lozenges containing **Eucalyptus, Menthol,** and **Cocaine.** In cases of phthisis with hacking, ineffective cough, a good formula is Syrupi Codeinæ, Syrupi Pruni Virginianæ, Oxymellis Scillæ, Aquæ Camphoræ, āā ʒss. To aid the morning expulsive cough of chronic bronchitis, bronchiectasis, etc., give Ammon. Carb., grs. v; Sodii Bicarb., grs. xx; Syrupi Tolutani, ʒj; Aquam, ad ℥j: to be taken immediately on waking, and to be followed by a cup of warm milk.

CROCODILE SKIN.

E. Graham Little, M.D., F.R.C.P.

Horand[1] reports a case of an extraordinary degree of hyperkeratosis of the hands in a countryman whose occupation it was to strip the bark off chestnut trees. An investigation into the experience of other workers in contact with chestnut wood led to the discovery that this was a very common affection among such workers. It was established that those with fine skins suffered most: that temperature influenced the development of this dermatitis, the lesion being worse in proportion to the coldness of the weather. The earliest symptoms are an erythematous redness, becoming violaceous; eczematization and lichenification follow, and swelling of the part; then fissuring of the skin, more or less deep, comes on. The erythema is at first confined to the palms and backs of the hands, but spreads up the forearm to the elbow. The affection is slightly painful. The irritation is caused by the sap from the tree, and an analysis showed it to be rich in tannin; a derivative of tannin obtained from this source was found to be extremely irritating, and was supposed to be the cause of this disease. A comparison with teak-dermatitis[2] shows many points of similarity.

References.—[1]*Gaz. d. Hôp.* Feb. 21, 1907; [2]*Brit. Jour. Derm.* Dec. 1905, p. 447.

CYANOSIS ENTEROGENOUS.

Robt. Hutchison, M.D.

A short account of this condition, also known as microbic, toxæmic, or idiopathic cyanosis, was given in the *Annual* for 1907 (p. 202). West and Wood Clarke[1] have since published a careful study of a case belonging to this group which was due to sulphhæmoglobinæmia. The following is the account of the case:—

A female, aged thirty-seven years, unmarried, admitted into hospital for debility and cyanosis. Although extremely feeble she was able to walk into the ward. The most striking feature was the colour of the skin, which was of a leaden hue, resembling that of silver staining, which made her look when asleep as if she was moribund. The cyanosis was universal, well-marked in the face, cheeks, lips, ears, and nose, and under the finger- and toe-nails. The tongue, too, showed the purple colour well. In all parts it was easy to demonstrate that the colour was due to the blood and not to pigmentation, as pressure with the finger or by bending the nails showed the skin, when emptied of blood, to be of the normal yellow hue. The fingers were not clubbed. The pulse was regular, feeble, not rapid, and of low tension. The respirations were 20, regular, and quiet. Physical examination revealed nothing. The cardiac dullness was normal. There were no cardiac murmurs. The lungs expanded well, were of normal size, and neither they nor the mediastinum presented any abnormal physical signs. The abdomen was normal, and the spleen was not enlarged. The urine had a specific gravity of 1015, contained neither albumin nor sugar, and was of the ordinary colour. The appetite was fair and digestion good; the bowels were habitually constipated, but were kept open daily with medicine. The patient slept well. The only objective sign about the patient, except her feebleness, was the cyanosis, and nothing had been discovered so far which would explain it. There was no sign of congenital morbus cordis or of emphysema. The absence of dyspnœa put out of court any pulmonary disease or mediastinal pressure.

A preliminary examination of the blood in the wards showed the number of red cells to be 4,800,000 per cmm., of the white 3800, while the hæmoglobin was 90 per cent. The case was, therefore, not one of polycythæmia. Another confirmatary examination was made a few days later by Dr. F. W. Andrewes, who reported the red blood cells to number 5,050,000 per cmm., the white cells 3400, and the hæmoglobin percentage to be 115. The differential count was normal—viz., polymorphonuclears 72 per cent, lymphocytes 24 per cent, large mononuclears 4 per cent, and eosinophiles none. The red cells were normal in size and shape, and there were no nucleated red cells to be seen.

A spectroscopic examination of the blood showed what appeared to be the spectrum of methæmoglobin. Subsequent examination confirmed this.

The presence of methæmoglobin in the blood led to a more careful examination of the urine. Its colour was normal, and the methæmoglobin spectrum was completely absent from it.

Some blood was now drawn from the patient and centrifugalized. Spectroscopically the serum showed no trace of methæmoglobin bands, but they were distinct in the portion containing the red cells. So far, then, the case appeared to be one of intracorpuscular methæmoglobinæmia. Most of such cases have occurred as the result of the action of certain drugs—chlorate of potassium, nitrite of amyl, permanganate of potassium, phenacetin, antipyrin, sulphonal, veronal, trional, and others. But in this case the evidence proved that drugs were not the cause of the condition.

The patient was subsequently readmitted to hospital, when further investigation of the blood showed that what had appeared to be the spectrum of methæmoglobin was really that of sulphhæmoglobin, and that the case was therefore one of intracorpuscular sulphhæmoglobinæmia.

The causes of this condition, the writers state, are far from clear. In this case a specific microbic infection of the blood seems hardly probable from the duration of the illness and the negative results of the blood culture. Increased formation of sulphuretted hydrogen in the intestines seems not likely to be the sole cause, considering the frequency with which this gas occurs in the normal intestine. In this case in the stools, after forty-eight hours' incubation, not enough H_2S gas was generated to show more than a trace in the fermentation apparatus, and the urinary findings usually associated with intestinal putrefaction were lacking. It is possible that the cause may lie more in the intestinal walls than in their contents, and that the error may be a hyperabsorption of H_2S rather than a hyperformation. On another hypothesis it may be possible that the defect is one which prevents the H_2S from being excreted by the lungs, and enables it to pass over from the venous blood, where, owing to the excess of CO_2, it is a more or less inert substance, and to enter the arterial system, where, finding oxyhæmoglobin with no protecting CO_2, it can attack it with toxic force.

From a clinical point of view, the occurrence of sulphhæmoglobin in the patient must be taken, as far as we at present know, as evidence of the action of H_2S upon her blood. The point of chief clinical interest, then, is to determine the source of the sulphuretted hydrogen and, if in the intestines, the explanation of its toxicity to one patient and not to another. On this question the writers are able to throw no light, but trust that as the condition becomes more widely recognized further investigation will solve the problem.

The authors give a table showing an analysis of thirteen previously published cases of idiopathic cyanosis—eight of methæmoglobinæmia and five of sulphhæmoglobinæmia. In the first four cases recorded of methæmoglobinæmia the exact nature of the condition is a little uncertain, as at that time the distinction between met- and sulphhæmoglobinæmia was not recognized.

The chief symptoms beside the cyanosis were headache and general weakness. The weakness was often extreme, and in two cases was described as a " feeling of paralysis of the arms and legs." The cyanosis was general, but especially conspicuous in the mucous membranes. There were no respiratory or cardiac symptoms other than the weakness would account for. Clubbing of the fingers was observed in two cases. The symptoms were usually of gradual onset, but occasionally developed very suddenly.

The duration of the cases varied from six months to eight years. Of six cases in which the result is recorded, five got well and one died. In the fatal case the only lesions discovered at the necropsy were ulcerative enteritis and chronic parenchymatous nephritis.

The blood-count is given in five cases, and showed that in spite of the pallor there was no real anæmia. The differential blood-count in one case was normal.

Contrasting the two groups, it would appear that the methæmoglobin cases were associated with diarrhœa, and improved greatly on a milk diet, while the sulphhæmoglobin cases were associated with constipation and did not improve till this was relieved. In Van der Bergh's first case of sulphhæmoglobinæmia, that of a boy, aged 9 years, the constipation depended on a rectal stricture which resulted from an operation for imperforate anus. A second operation, which relieved the stricture and constipation, was followed by recovery.

Oliver,[2] in a lecture on "Cyanosis, General and Local," describes three cases of cyanosis due to the taking of synthetic drugs of aniline origin (phenacetin, acetanilid, antipyrin, etc.), and states that there is not the least doubt that the indiscreet use of such preparations is attended by risk to life. Workers in nitrobenzine factories also often become markedly cyanosed and pass dark-coloured urine.

REFERENCES.—[1]*Lancet*, Feb. 2, 1907; [2]*Ibid.* Dec. 29, 1906.

DELIRIUM TREMENS.

Accept early evidences of mental excitement as indications for treatment, which should consist of isolation with suitable attendants (physically strong and not readily frightened), confinement to bed as far as is possible without violence, and a full diet of milk with such other foods as the patient may care for. Give **Calomel** gr. v at the very outset of treatment, but no other drug; except in maniacal cases, where **Potassium Bromide** gr. xxx may be given thrice daily, and in enfeebled cases where stimulants (**Ether, Ammonia, Alcohol, Strychnine**) are needful. For insomnia, exhausting the patient, a hypnotic may be needed: ℞ Paraldehyde, ʒj–ʒij; Syr. Aurantii, ʒij; Aq., ad ℥j: Or ℞ Chloralamide, gr. xx; Aq. Chloroformi, ad ʒj; at bedtime.

DENGUE.

J. W. W. Stephens, M.D.

E. B. Vedder[1] records as the results of the leucocytic counts in twenty cases of dengue that there is: (1) No change in the number of red cells; (2) A marked leucopenia: (3) A marked reduction in the polynuclears, showing itself by the second or third day at latest; (4) A corresponding increase in the lymphocytes, especially affecting the smaller (young) forms of these; (5) A slight increase in the eosinophils. As an example of such a count we may give the following: Total leucocytes 4800, polynuclears 30, lymphocytes (large and small) 58·3, large mononuclears 1·3, eosinophils 10·0. It must be noted that in these counts the different kinds of mononuclears were separated by the criterion of size only, which is hardly sufficient. In yellow fever the author notes that the relative count is not changed in this marked way.

Rogers[2] describes in Calcutta a common sporadic seven-day fever of Indian ports simulating dengue. The difference between it and dengue is best illustrated by the following table :—

	Dengue.	Seven-Day Fever.
Prevalence :—	At long intervals in epidemic form, attacking large proportion of residents.	Annually in sporadic form.
Distribution :—	Specially attacks coast towns, but spreads far inland.	Only known near the coast so far.
Race Incidence :—	Europeans and natives equally attacked.	Very common in Europeans ; comparatively rare in natives.
Seasonal Incidence :—	Mostly in hot months, but may prevail in cold season.	Prevails in hot and rainy seasons only.
Relapses :—	Very common in same year as first attack.	Rare, and not in same year as first attack.
Pains :—	Very severe, and breakbone in character.	Moderately severe as in influenza, and not of breakbone character.
Joint Symptoms :—	Very common and characteristic.	Absent, or only present as slight pain.
Convalescence :—	Very tedious, lasting from one to three months, with persistent joint-pains.	Rapid, no after joint-pains.
Fever :—	Lasts two or three days, falling to normal with crisis ; occasional very short secondary rise ; markedly remittent.	Five to eight or more days, with typical saddle-back remission to 100° or 90° F. only ; otherwise continued in type.
Pulse :—	Rapid.	Slow, especially in terminal rise.

REFERENCES.—[1]*N.Y. Med. Jour.* Aug. 8, 1907 ; [2]*Lancet*, July 20, 1907.

DENGUE.

(*Index of Treatment, p.* 206)—No specific is known. Enjoin low diet and rest in bed. The pains are prevented by rest, and cured by hot applications, followed later by counter-irritants. Morphia may be necessary.

DERMATITIS EXFOLIATIVA NEONATORUM and PEMPHIGUS ACUTUS NEONATORUM.

E. Graham Little, M.D., F.R.C.P.

The first disease, commonly known as Ritter's, has usually been regarded as *sui generis.* The type is so rare and obscure that any new light thrown upon it is welcome. Hedinger[1] reports a case in a newborn infant, born perfectly healthy, and of a healthy mother. A few days after birth the whole body became red, and a week after a small vesicle appeared on the umbilicus, followed by others, some as large as bullæ, on the legs and left foot. Diarrhœa and exfoliation set in.

The contents of a bulla gave a pure culture of *Staphylococcus pyogenes aureus.* The patient became dangerously ill, the temperature rose to 38·8° C.; and the child died with symptoms of pneumonia. The writer takes the view that dermatitis exfoliativa is a specially malignant form of pemphigus neonatorum, characterized by marked exfoliation of the epidermis.

REFERENCE.—[1]*Centr. f. Derm. u. Syph.* July, 1906, p. 349, quoted *Brit. Jour. Derm.* 1906, p. 55.

DERMATITIS VEGETANS.

E. Graham Little, M.D., F.R.C.P.

Corlett[1] reports a case of indeterminate character which he names as above, in a male infant of seven months who, when three months old, developed tumours or plaques of a cauliflower-like shape, with a little superficial suppuration. The figure included in the paper and the description certainly suggest very strongly the diagnosis of bromide eruption, but it is expressly stated that the drug was not administered to or taken by either mother or child. The tumours disappeared within about a year, leaving scars which were well marked twenty years later, the patient having been first seen in 1887. Having recently seen two cases in children, of an exactly similar type, in one of which, after much prevarication and difficulty, the taking of bromide was established, and in the other of which, though no bromide administration could be ascertained, the unanimous opinion of the Dermatological Society of London favoured the diagnosis of bromidism, I am personally convinced that this case must be regarded as an instance of that affection.

REFERENCE.—[1]*Brit. Med. Jour.* Oct. 6, 1906.

DIABETES.

Prof. J. Rose Bradford, D.Sc., M.D.

Glycosuria and Diabetes.—Many different forms of glycosuria are known to exist, and their classification and relationship to diabetes is by no means clear. Barringer and Roper[1] deal with a certain variety known as spontaneous glycosuria, a variety of alimentary glycosuria. They consider that cases of glycosuria should be divided into two groups: the transient or intermittent, and the continuous, and that all the latter are really cases of diabetes. Further, that alimentary glycosuria may be (1) the result of the excessive intake of any *sugar*, (2) may arise merely from *starch*, or (3) from a mixed diet. The first form may be termed alimentary glycosuria; the second variety is really a form of true diabetes, and the third may be termed spontaneous glycosuria. In this classification spontaneous glycosuria may be transient or permanent, and if the latter the case is really also one of diabetes. The form of glycosuria with which the authors deal is therefore termed by them transient spontaneous glycosuria. Von Noorden is of opinion that a transient glycosuria which is not dependent on a diet excessively rich in sugar is often the signal of later true diabetes. Barringer and Roper have been able to find in literature nine cases of transient or spontaneous glycosuria of characteristic type that subsequently developed into true diabetes. In most cases the interval before the development of diabetes was one year or less, but in one instance four years elapsed prior to the diabetes.

These authors deal with the questions as to the frequency with which cases of spontaneous glycosuria develop into diabetes, and the possibility of identifying these cases at an early date. For this purpose they have examined the material accumulated in one of the large insurance companies of New York. They selected cases where the glycosuria amounted to 1 per cent or less, choosing the slighter forms of glycosuria in order to exclude, if possible, all diabetics. Sixty-nine cases were collected, but of these twenty-four could not be traced; of the remaining forty-five, twenty gave facilities for the enquiry, and the remaining twenty-five refused to do so, but of these twenty-five at least half were apparently in good health. The remaining twenty cases were fully investigated by the authors during the summer of 1906. In these twenty cases transient spontaneous glycosuria was first discovered between 1895 and 1901. They all showed the presence of sugar in their urine in 1900 or 1901. The authors found that only two of the twenty individuals were suffering from ill health: one had developed chronic nephritis and the other tabes. Nine had gained in weight, nine had remained stationary, two had lost weight. Four of the twenty individuals had developed mild diabetes in from five to eight years after the onset of the glycosuria; the remaining sixteen excreted normal urine, as determined by the examination of twenty-four hours' specimens. One hundred grams of glucose were given to eighteen of the twenty individuals during the forenoon, and the urine was examined three hours after the administration. It is usually asserted that from 150 to 200 grams of glucose must be given to healthy people in order to produce glycosuria. In four instances an alimentary glycosuria of from 1 to 4 per cent was produced, these being the four diabetics observed in the series. In five of the cases, from 1 per cent to 4 per cent glucose was excreted in the urine; in two, traces of glucose only were present; and in seven no excretion of glucose took place. In the five cases where measurable quantities of glucose were excreted, the authors were strongly of opinion that the patients were diabetic. As the result of this test it would seem that four out of the twenty cases were definitely diabetic, and that five were probably diabetic, leaving eleven altogether free. It is of some interest to observe that in all the cases where true diabetes had developed, the glycosuria that formerly existed, although transient, had been observed on more than one occasion. This well exemplifies the value in prognosis of repeated examination of the urine in cases of transient glycosuria. Some statistics collected by the Insurance company as the result of experiment showed that at least 37 per cent of cases of spontaneous glycosuria showed alimentary glycosuria within a year of the discovery of the presence of sugar. The authors conclude that: (1) At the end of five years 20 per cent of the cases of spontaneous glycosuria have become diabetic, 15 per cent have become suspicious cases, and 10 per cent somewhat suspicious, but 55 per cent remained free from diabetes ; (2) In eight out of eleven cases in which sugar recurred, diabetes ensued ; (3) Alimentary glycosuria arising from the ingestion of glucose or cane sugar is a valuable aid to prognosis in cases of spontaneous glycosuria ; and (4) Alimentary glycosuria e saccharo, is essentially diabetic.

If a small quantity of sugar is found in a patient's urine and there is no excessive ingestion of sugar as such, a restricted diet should be ordered, and the effect of the ingestion of glucose tested during the next six months. If the reaction is positive, the diet should be continued, even though the spontaneous glycosuria has not recurred. On the other hand, the restricted diet is superfluous if the reaction is negative. Thus it is not necessary to maintain a permanently restricted diet in all cases of transient glycosuria.

A New Method for the Detection of Sugar.—Fenton, at the Cambridge Philosophical Society, November, 1906, described a new method for the detection of sugar. The test is of sufficient delicacy to detect ·2 per cent, or even less, of sugar in the urine. The reaction depends upon the fact that all carbohydrates of the hexose type, e.g., dextrose, lævulose, maltose, yield bromo-methylfurfurol when acted on by hydrobromic acid ; and further, that the former substance reacts with malonic ester in the presence of alkalies, giving rise to a product which exhibits a blue fluorescence. Four or five cubic centimetres of urine are poured on to an excess of solid anhydrous calcium chloride so as to form a semi-solid mass. To this 10 cc. of toluene containing two or three drops of phosphorus tribromide are added. The mixture is boiled for a few minutes, and this must be done with care, owing to the inflammable nature of toluene. The toluene solution is then poured off and cooled, and to it is added 1 cc. of malonic ester and a little alcohol. The solution is neutralized by adding alcoholic potash drop by drop, and this leads to the production of a characteristic pink colour. The mixture is now diluted with alcohol and a few drops of water, and if any sugar is present in the urine the liquid will show a beautiful blue fluorescence. According to Fenton, the reaction is a specific one for carbohydrates which contain six or more atoms of carbon in the molecule, and may therefore be used to distinguish hexoses from the pentoses.

Glycosuria and Life Assurance.—Kellas and Wethered[2] record a series of observations with reference to the detection of sugar in the urine, and its significance in connection with life assurance. They state that Fehling's test for sugar in the urine is complicated by certain retarding effects of creatin, creatinin, and mucin. The creatinin has a much greater retarding influence than either creatin or mucin. When only small quantities of sugar are present in the urine, in order for the test to be carried out satisfactorily the urine should either be diluted so that its specific gravity is lowered to 1012 or 1015, or the volume of Fehling's solution used should be increased. Where the specific gravity of the urine is not higher than 1020, equal volumes of Fehling and urine should be employed ; with the specific gravity from 1025 to 1030, the proportion should be two of urine to three of Fehling; and from 1035 to 1040, twice as much Fehling solution as urine. In some instances the substances that interfere with the reaction may be precipitated, either by the use of copper sulphate and sodium acetate, or by mercuric chloride and sodium acetate. Temperature has a considerable influence on the appearance and formation of the copper precipitate if only small quantities of sugar are present, and prolonged boiling may undoubtedly bring down a green precipitate due to excessive urates, unless these have been previously removed.

The authors consider that the best method of performing the test for life insurance purposes is as follows: The urine should be diluted until its specific gravity is from 1012 to 1015, and should then be mixed with an equal volume of Fehling's solution and boiled for a few seconds. If no precipitate forms within two minutes it may be concluded that there is no sugar present of pathological import. Under these conditions. ·4 per cent or more would give an orange or red precipitate within one minute of reaching the boiling point, while ·2 to ·25 per cent would give a precipitate within two minutes. The authors think that the safranin test for sugar deserves a more general use; it is a more reliable test for sugar in the urine than either Fehling's or Pavy's fluid, since the reagent is unaffected by creatinin, creatin, mucin, uric acid, or urates. A solution of safranin containing one gram per litre is employed. Two cc. of this solution and 2 cc. of normal caustic soda or potash are mixed with 2 cc. of urine, the mixture is boiled, and if glucose be present, even to the extent of ·1 per cent, a bright red colour gives place to a clear yellow, and at the same time the solution becomes turbid; if a large quantity of sugar be present the urine should be diluted. Other sugars, such as lævulose, lactose, maltose, and probably pentose, as well as glycuronic acid, reduce safranin, and thus this test is a means of estimating approximately the maximum quantity of reducing sugars which are present in normal urine. The fact that safranin invariably gives a reaction with ordinary urine would seem to show that the reduction caused by normal urine is not mainly due to creatinin and to urates. The phenyl-hydrazin test requires caution when only small quantities of sugar are present, and in these cases the crystals must be examined microscopically. The authors further think that the fermentation test is untrustworthy with small quantities of sugar. They are of opinion that the balance of evidence strongly supports the view that small quantities of sugar are normally present in the urine, and the average amount normally present would seem to vary between ·01 per cent and ·09 per cent. In testing for life assurance, as many tests as possible should be applied in doubtful cases, and the safranin test is especially of use in conjunction with the Fehling test where the latter alone might be insufficient to determine whether small quantities of sugar or large quantities of creatinin are the cause of the reduction of the Fehling. Glycuronic acid can be distinguished from glucose either by the fermentation test or by phenylhydrazin.

Islands of Langerhans in Diabetes.—Karakachev[3] has studied five cases of diabetes terminating with coma, and in all found fatty degeneration and atrophy of the pancreas, with overgrowth of the connective tissue. The islands of Langerhans were less numerous than normal, and the major portion of them showed signs of transformation into normal pancreatic acini. Karakachev thinks that in the cases where these islands have been described as absent they have all really become converted into normal acini. This is the conclusion that was first drawn by Dale, and it would seem to be confirmed by the fact that in the new-born infant the examination of the pancreas shows a number of buds from the alimentary mucous membrane, some of which remain in an undifferentiated state, forming masses or islands of cells.

MacCallum[4] records a case of diabetes mellitus where there was marked hypertrophy of the islands of Langerhans. There are many cases of diabetes in which no definite lesions of the pancreas are found, and the cause of the malady must in these cases be regarded as extra-pancreatic. In MacCallum's cases the alterations in the islands of Langerhans cannot be interpreted as entirely degenerative. On the other hand they would seem to indicate an actual increase in the bulk and function of these structures. The microscopic examination of the gland in his cases showed that there was no great destruction of the parenchyma nor any overgrowth of connective tissue, but the islands of Langerhans were much more numerous than normal; they stood out very prominently in the section. Measurements were made and compared with those in five normal glands, and this showed that they were distinctly enlarged in the case of diabetes.

The case recorded by MacCallum is that of diabetes in a patient aged 10, and he mentions a similar case in another child in the Johns Hopkins Hospital, where the pancreas presented similar changes, the islands of Langerhans being increased in size and number, and considerably modified in their general appearance. The author is inclined to regard these cases as supporting the view that there was some disturbance of carbohydrate metabolism from an extra-pancreatic cause, and that these led to an excessive amount of work being imposed on the pancreas, and thus to hypertrophy of the islands of Langerhans. He thinks it possible that the islands were not only hypertrophied, but that they may have been actually formed from the tissue of the pancreas. The cells of the islands presented some changes which suggested degeneration, and it is therefore possible that the diabetes ensued subsequently to their degeneration.

REFERENCES.—[1]*Amer. Jour. Med.* June, 1907; [2]*Lancet*, Oct. 1906; [3]*Deut. Arch. f. klin. Med.* No. lxxxvii, 3 and 4; [4]*Amer. Jour. Med.* Mar. 1907.

DIABETES INSIPIDUS.

(*Vol.* 1905, *p.* 209)—Many treatments are suggested. Amongst them **Ergotin**, which effects an improvement, but not a cure; **Weir-Mitchell** methods, which cured a case beginning after an hysterical attack; **Strychnine** hypodermically; and **Opium**, with the idea of checking the thirst, which is probably the primary phase. Tallgrist recommends a diet free from chlorides and poor in nitrogen. (*Vol.* 1900, *p.* 161)—

Other drugs recommended are **Amylene Hydrate**, gr. xxx rising to ʒiij, at bedtime ; **Paraldehyde** ; and **Antipyrin**, gr. v to xv, three times daily. (*Vol.* 1891, *p.* 139)—Opitz gave Antipyrin with good results. He began with gr. xxx and increased the dose day by day up to gr. xc.

DIARRHŒA AND VOMITING, INFANTILE.

Prof. G. F. Still, M.D., F.R.C.P.

Etiology.—Kerley[1] discussing the prevention of the acute intestinal diseases of summer in infancy, points out—what parents and doctors too often fail to realize—that an attack of diarrhœa or vomiting, however slight, or even a green, undigested stool occurring in an infant under eighteen months of age during the summer months, is to be looked upon as a serious matter, requiring prompt treatment. The present writer[2] shows that the mortality from infantile diarrhœa in London, so far from decreasing, is actually becoming heavier ; and whereas in 1891 nearly one-tenth of the deaths under one year of age were due to diarrhœa, in 1901 the proportion was one-fifth. An important feature in the statistics of diarrhœa mortality in infancy is the much smaller proportion of deaths under three months of age than in later infancy ; one-sixteenth of the total mortality under the age of three months is due to diarrhœa, while about one-sixth of the mortality between the ages of three months and six months is due to this case. At first sight this appears contrary to all we know as to the liability to diarrhœa and its dangers at those ages, for this disease is certainly by far the more dangerous the younger the infant. The explanation lies in the fact that the younger infants are more often breast-fed, and so are far less exposed to the risk of diarrhœa. Investigations at the Children's Hospital, Great Ormond Street, showed that 96 per cent of the infants who died of infantile diarrhœa were hand-fed. The present writer emphasizes also the danger of **Condensed Milk** as a predisposing cause of diarrhœa. Some doctors order condensed milk because it is sterile, and therefore supposed to be safer. But in reality statistics show that the infant fed with condensed milk is specially prone to severe diarrhœa ; it was found that 12 per cent of infants of the hospital class were fed on condensed milk, but amongst the fatal cases of diarrhœa the proportion was 25·8 per cent.

The correspondence between the temperature curve, as shown by the Registrar-General's report of the mean weekly temperatures, and the curve of diarrhœa-mortality, is fairly close. The latter begins to rise about three weeks after the former, as might be expected, for the diarrhœa lasts usually two or three weeks before the fatal ending. What is the connection between the temperature of the atmosphere and the occurrence of diarrhœa ? At present this question has not been answered. It is not certain that all summer diarrhœa is bacterial, nor is it known whether bacteria causing diarrhœa are necessarily introduced at the time from without, or whether they may not be normal inhabitants of the bowel, and multiply rapidly and become pathogenic under certain conditions.

Classification.—Various classifications of infantile diarrhœa have been attempted, the latest, being by Rotch, Ladd, and Dunn,[3] who would classify it according to its etiology: thus they recognize (1) Diarrhœa due to intestinal indigestion, which they would subdivide according as it is owing to (*a*) deficient secretion in the bowel, (*b*) fermentation in the contents of the bowel; and (2) Diarrhœa of infectious origin, which they would subdivide into (*a*) dysentery, (*b*) cholera infantum, (*c*) due to other organisms. This classification seems excellent so far as the two main groups go: infectious and non-infectious diarrhœa; but as no one is in a position as yet even to distinguish with any degree of certainty between these two groups, although we may feel tolerably confident in some cases that a diarrhœa is due to some infection or otherwise, it seems somewhat premature to subdivide them. The bacteriology of infantile diarrhœa must be much more thoroughly known before we can pretend to distinguish between "dysentery" and diarrhœa "from other organisms." At present, classification of infantile diarrhœa amounts to little more than a distinction of degrees of severity.

SYMPTOMS.—Amongst the symptoms of infantile diarrhœa, a not uncommon one is œdema. Rocaz[4] states that this occurs especially in the subacute form of what he calls enterocolitis, in which there is slight diarrhœa alternating with constipation, the stools are offensive and contain mucus, the abdomen is sunken and tender, and there is often vomiting. Œdema is also found with acute enteritis with high temperature and vomiting, where the motions are soft, pale,.and have an ammoniacal odour. Œdema rarely occurs when diarrhœa is copious: it is due to retention in the system of sodium chloride, and is associated with deficient renal secretion, which may possibly be due to renal disease, but is more often due to renal insufficiency. Owing to the retention of sodium chloride, it is unwise, so Rocaz says, to use normal saline injections if there is nephritis or if œdema is already present.

Albuminuria is common enough in infantile diarrhœa, but it may be doubted whether a real nephritis occurs in many cases. Voelcker[5] states that in cases of acute gastro-enteritis a microscopical examination of the kidneys often reveals evidences of early yet distinct inflammatory mischief; yet such cases do not conform to the clinical type of cases of acute nephritis, nor has he been able to obtain evidence that where recovery from the acute condition occurs there is any further development of the symptoms which are found in acute nephritis.

As a complication of infantile diarrhœa, Comby[6] thinks that appendicitis is not very uncommon, especially where the primary condition is enterocolitis of membranous type. The same writer notes the sequence of enterocolitis and appendicitis after rhinopharyngitis and adenoiditis; the bowel condition is due to swallowing infective material from the throat. Rough and Josseraud[7] go further, and believe that adenoids are a very common cause of diarrhœa in children, and quote cases in which removal of adenoids was followed by cessation of diarrhœa.

DIETETIC TREATMENT.—Morse[8] points out that the object to be aimed at is to starve the bacteria without starving the baby. The most effectual way to starve the bacteria is by the complete withdrawal of all food, but this cannot be continued long, or the baby would suffer. He would in all cases of acute diarrhœa (enterocolitis) stop food entirely for a time, the duration of which must vary according to the severity of the illness and the condition of the infant. He does not include the withholding of water; this he would give in as large amount as they would normally get in their food: if the baby vomits the water, it should be given by the bowel, and if not retained in the bowel, it must be given subcutaneously. This water diet may be continued twenty-four hours, sometimes even forty-eight or seventy-two hours; but what food is to be given then? Milk is theoretically objectionable, for the infection is thought to be conveyed especially by milk; but as Morse points out, no one thinks of choosing milk as the medium on which to grow the organisms in the laboratory: preparations of meal or carbohydrates are preferred—the very materials from which the foods substituted for milk are usually made. As a matter of clinical experience, however, most infants with diarrhœa do better without milk, but Morse thinks this may be due rather to the weakness of the substitutes used than to any special virtue in their constituents; barley water, for instance, contains ·25 per cent of proteid, ·05 per cent of fat, and 1·5 per cent of starch, and is thus only $\frac{1}{10}$ the value of milk in nourishing constituents. The white of one egg also is equivalent in nutritive value to only $\frac{3}{5}$ oz. of milk. Beef-juice contains ·6 per cent fat and 2·9 per cent proteid, giving a nutritive value, bulk for bulk, only one-quarter that of milk. Broths contain only 1 per cent proteid. If milk were correspondingly diluted it would do equally well.

In choosing a substitute for milk, Morse says that as a general rule it may be considered that sour stools mean bacteria which thrive on sugars and starches, and foul stools those which thrive on proteids; but most frequently, in his experience, starches and sugars are better tolerated than proteids. Barley water and milk sugar are useful, but it must be remembered that in enterocolitis there may be degenerative changes in the liver which interfere with the power of utilizing sugars. Albumen-water, he says, is very liable to produce œdema, and beef-juice and broth to cause pale and watery stools, while the extractives they contain may increase peristalsis and irritate the kidneys. The great difficulty is to know when to resume milk. It is seldom wise to give milk so long as the temperature is much above normal; but provided there is not much pyrexia, Morse would try milk after a week. When given it should be very dilute, feeble, alkaline, and pasteurized; and often it is best to begin with whey-mixtures, or peptonized or barley mixtures. Pasteurized butter-milk is also valuable in these cases.

Batten[9] reports cases fed on "**Lactated**" **Milk,** that is, milk in which lactic acid fermentaton has been artificially produced, a preparation closely resembling butter-milk. In theory this should prove useful, for Metchnikoff showed that some forms of lactic-acid-producing micro-organisms inhibit the growth of certain pathogenic and putrefactive bacteria. But the good results are due not merely to the lactic acid; the casein of the milk is in some way changed and becomes more digestible. The mode of preparation is as follows: fresh milk is sterilized and cooled to 96° F.; to every 11 oz. of milk one tube (about 3 dr.) of fluid "lactobacilline" is added (this is prepared in Paris, but can be obtained from Wilcox, Jozeau & Co., 49 Haymarket); the mixture is well shaken, and kept in an incubator at a temperature of 96° F for seven hours; during this time the milk becomes sour and clots like a feebly-set junket. The milk is now placed on ice for twelve hours; at the end of this time the clot has become dissolved into a creamy fluid which is just sour. The lactobacilline can be obtained as a dry powder, which is put to incubate in a few ounces of warm milk before use, and then used in the same way as the fluid lactobacilline, but Batten found it less constant in its results. The milk thus "lactated" or acidified seemed to have some beneficial effect; the condition of the stools improved, and for a time many of the children seemed better; it seemed more useful in the chronic forms of diarrhœa and in colitis than in the acute stage of infective diarrhœa.

Vegetable Broth has been advocated by Bailey[10] for use in infantile gastro-enteritis. He gives the following recipe: Carrots, 65 grams; potatoes, 5 grams; turnips, 25 grams; dry peas or haricot beans, 25 grams to each litre of water. After thoroughly cooking, strain, and add 5 grams of salt per litre.

Fluid Gelatin is said to have an excellent effect. Mann and Herzberg[11] advise a 10 per cent solution of gelatin, which, if boiled for six hours and then filtered, keeps clear and fluid for days. Calves' feet, about a pound to the quart of water, boiled down to one pint, makes a good broth, checking the diarrhœa and having some nutritive value.

THERAPEUTICS.—La Fétra[12] insists upon the importance of elimination in infantile diarrhœa, and considers that the most valuable drugs are the alkaline cathartics, Glauber's salt, Epsom salts, and Rochelle salts. The **Sulphate of Soda** (Glauber's salt) is to be given in doses of 10 gr. every half-hour or hour to an infant of nine months, and in doses of 20 gr. to a child of two years. **Magnesium Sulphate** (Epsom salts) is preferable for older children, especially when there are dysenteric stools with much blood. For infants under nine months, this treatment must be adopted only with caution, and never when the patient is already depressed, with sunken fontanelle and low temperature. La Fétra claims for it a more rapid and thorough evacuation of toxic material than by calomel or castor oil, which are also liable to provoke vomiting; he states also that blood disappears rapidly from the stools when this treatment has been adopted early.

If vomiting is persistent, **Calomel** should be given in small doses. **Castor Oil**, according to the same writer, finds its best use in the later stages of the disease, given in small doses with **Bismuth.** **Weak Tea** given hot is useful in promoting elimination both by the skin and by the kidneys, and is at the same time slightly stimulant and astringent. Elimination is also aided by copious **Irrigations,** large enough to reach the upper part of the colon. Two to four quarts of normal saline solution, made alkaline by addition of an equal quantity of sodium bicarbonate, are allowed to flow into the bowel while the infant lies on its back with the hips elevated ; about 1 to 2 pints will distend the whole colon. A certain amount of the saline solution is absorbed, as can be ascertained by the increased activity of the skin and kidneys within a couple of hours. If it is desired to stimulate the infant and still further increase the activity of the skin and kidneys, some **Whisky** or one of the alcoholic **Peptonoid** preparations may be added to the saline solution. The temperature of the solution is to be hot, tepid, or a few degrees cooler than the body, according to the temperature. These irrigations may be done twice in the twenty-four hours unless they weary the child.

If the collapse is very great, 100 cc. or more of saline solution should be given subcutaneously, a process which is described as *hypodermatoclysis*, but which is found to be equally effectual when called a subcutaneous injection or infusion ! **Atropine**, given hypodermically in doses of $\frac{1}{1000}$ gr. every two hours until the physiological flushing or dilatation of the pupil occurs, has also seemed of value in these severe cases by acting as a stimulant to respiration.

Hydrochloric Acid added to the drinking water in very small amounts is often of help, for it not only assists gastric digestion but stimulates the biliary and pancreatic secretions. **Suprarenal Extract** is a valuable stimulant, and if the child is not vomiting, the **Tincture of Nux Vomica** or **Tannate of Quinine** may be given by the mouth ; if there is vomiting, hypodermic injections of **Strychnine** ($\frac{1}{300}$ gr.) and of **Camphor Oil** should be used. As soon as the bowel has been thoroughly evacuated and the temperature is lower, a mixture should be given of **Bismuth Subnitrate** or **Subgallate** 15 to 20 gr., with about 5 gr. **Zinc Oxide**, in chalk mixture or simply stirred up in water. Instead of using salicylate of bismuth, La Fétra uses the **Salicylate of Soda,** or **Creosote**, mixed with **Peptonoids,** which are given as food. If the temperature is nearly normal, and the stools are still very frequent, opium should be given in doses of $\frac{1}{5}$ gr. **Dover's Powder** or 5 min. **Paregoric.** If there is much vomiting, **Morphine** gr. $\frac{1}{100}$ should be given hypodermically. Abdominal tenderness calls for the application of counter-irritants, and those are best which mean warmth ; sometimes a mustard plaster is good. For the mucus which may persist in the stools long after the acute stage, bismuth is indicated ; and if solid food can be given the mucus will diminish. If the stools are frequent, small, and bloody, high irrigations with gelatin solution, to which adrenalin or 10 per cent solution of protargol is added, will often stop the bleeding after two or three administrations. Tenesmus may be relieved by warm irrigations of starch paste, with or without opium, and for the same purpose an oil or gelatin rectal injection may be successful ; the anus and prolapsed rectum should be smeared with 5 per cent cocaine ointment.

Lavage or stomach-washing is mentioned by Lauzun-Brown[13] as one of the approved means of treatment ; for this purpose a solution of sodium bicarbonate 2½ gr. to the ounce, a 2½ per cent solution of boracic acid, Vichy water, or plain water may be used. **Cyllin Syrup** is recommended by the same writer for internal administration ; it is said to be a reliable intestinal antiseptic, and safe and agreeable ; the dose to be given is not stated, but 10 min. is said to be equivalent to 3 min. of pure phenol, though without its poisonous effect. A prescription mentioned is :—

℞	Bismuth. Subnitrat.	gr. v	Vin. Ipecac.	♏iij
	Liq. Opii Sedativ.	♏½	Aq. Cinnamom.	ʒij

This writer also recommends **Olive Oil** to be given either by rectum or, if sterilized, hypodermically. He thinks it has a sedative action and a nutritive value ! Opium he condemns altogether, and makes the remarkable statement that " most authorities are agreed that it has no effect whatever in checking the diarrhœa," and concludes that it is probably safe to adopt Trousseau's recommendation to avoid opium rigorously in every form, as it leads readily to what Trousseau called " the typhic stage."

From time to time an advocate of tannin and its various combinations arises in spite of repeated statements that these are of very little use in the diarrhœas of infancy. Toff[14] says that tannin diminishes the secretion of the mucosa, and by combining with the albuminoid ptomaines and toxins in the intestines acts as an antiseptic. Pure tannin has the disadvantage that small doses are ineffectual, while large ones produce or increase gastro-intestinal irritation. **Tannalbin,** however, is insoluble in the stomach, but in the small intestine is split up into its component parts, so that the tannic acid acts upon the upper part of the small intestine. To infants under one year of age he would give 15 to 30 gr. in the twenty-four hours in a decoction of calumba in hourly doses. To older children 45 gr. may be given in the twenty-four hours, and in dysentery a level tablespoonful of tannalbin in half a pint of mucilage may be injected into the bowel.

The value of **Hot Injections** into the bowel, as opposed to the ordinary warm injection, has recently been emphasized by Caravassli,[15] who recommends that the temperature of the fluid used should be about 105° F. This has a soothing effect both upon the bowel and the infant, and is said to materially shorten the duration of the diarrhœa.

The advantages of **Sea Air** are the subject of an article by Beck,[16] who finds that at the seaside, although diarrhœal diseases are not uncommon in infancy, they are less severe than in town, and that a trip to the seaside has a decidedly curative effect.

The present writer[17] has found **Silver Nitrate** of value in cases of diarrhœa due to affections of the colon, especially of subacute degree: $\frac{1}{8}$ gr. should be given three or four times a day dissolved in distilled water, which may be sweetened with saccharin.

Chronic Vomiting in Infancy.—It is a common enough occurrence in infancy for vomiting to occur after every meal or almost every meal, and if the vomited material is only slight in amount no harm is done, and the condition may be regarded as physiological; but there are less common cases in which apparently similar vomiting occurs, but in much greater degree, and some writers recently have described these cases under the name of "pylorospasm." This term hardly seems judicious, for it rests entirely on assumption, and has introduced confusion between such cases and the much more serious condition which is known as congenital hypertrophy of the pylorus, in which it is certain that spasm of the pylorus plays a large, and perhaps the chief, part. Here, however, such causes of vomiting will not be considered, but only that which is due to "gastric indigestion" or "chronic gastric catarrh"; terms which must be taken rather as clinical descriptions than as accurate pathological definitions, for as Hess[18] points out, there is great difficulty in distinguishing between them, and the one condition shades off into the other.

Chronic vomiting in an infant may be due at first simply to overloading of the stomach, which might easily be prevented. Soon the vomiting, which at first has been only occasional, becomes more frequent, and appears after ingestion of smaller quantities, and very soon after the meal. Then, as the glands of the stomach mucosa undergo atrophy, more mucous secretion appears, and the infant wastes. If the infant is not being suckled, it will usually be found that its food contains too high a percentage of proteid fat or carbohydrate. Ashby[19] says that in such cases there is generally a condition of gastric inertia: the stomach dilates from constant distention with gas given off from its decomposing contents, which are retained in the stomach, undergoing fermentation until ejected by vomiting. The stomach gets into a condition of "food-phobia," a sort of intolerance of food, just as the eye in certain conditions of the conjunctiva and cornea suffers with a photophobia.

Diagnosis.—These cases must be carefully distinguished from those of pyloric hypertrophy, in which the visible and large peristaltic wave of the stomach and the palpable tumour of the pylorus make diagnosis certain. Ashby says that the vomiting of pyloric hypertrophy mostly begins within four to six weeks after birth, and continues without much intermission in spite of changes of food and treatment. Another pitfall is the vomiting, which is sometimes an early symptom of infantile scurvy. An infant of eight months, perhaps, has been given peptonized milk and various patent foods, some of which suited well enough for a time, but it had colic and occasional vomiting; lately it has vomited much more, and is rapidly going downhill. There are no hæmorrhages, no tenderness of the limbs, and none of the classical symptoms of scurvy, and yet fresh, undiluted milk is taken from the first with no vomiting at all. In these cases, Ashby says the alimentary canal revolts against the long continuance of preserved or predigested foods, but will retain and digest fresh milk at once. A mistake is easy also between gastric and cerebral vomiting; the vomiting at first may subside after a few days, and all seems well, but a little later the child has convulsions, and soon shows the ordinary symptoms of meningitis.

TREATMENT.—Ashby (loc. cit.) recommends commencing by **Washing Out the Stomach.** The next point is to insist on small feeds; otherwise fermentation will continue. **Whey** or **Diluted Sterilized Milk,** or fresh milk practically free from bacteria, usually suit best. Myers and the present writer[20] have drawn attention to the value of **White-wine Whey** (sherry-whey) in the feeding of infants with vomiting and flatulent colic. In ordinary rennet-whey the milk-curd has been removed, and much of the fat also which was entangled in the curd; but owing to the less solid curd formed in the sherry whey, the fat is less completely entangled, so that the resulting whey contains more fat than is to be found in ordinary whey, unless special precautions have been taken to beat up the curd thoroughly. It differs also in certain other respects: the essential oils or volatile ethers of the wine seem to impart to the whey a carminative effect; the sherry also gives to the whey an acid reaction which, like that of buttermilk, may possibly be of value in some cases. The method of preparation which was found most satisfactory was as follows: Ten ounces of milk were heated until just boiling, then 2½ oz. of "cooking sherry" were added, and heat was applied again until the mixture began actually to "boil up," when it was removed from the fire and allowed to stand three minutes; the curd was then strained off through a twofold layer of butter-muslin. White-wine whey prepared thus was found to contain alcohol in proportions varying from 2·28 per cent by weight up to 2·6 per cent. For clinical purposes it is useful to know that on this basis one ounce of white-wine whey is equivalent in alcoholic strength to 25·8 minims of brandy. In the use of this food, therefore, it must be remembered that it contains a considerable proportion of alcohol, and feeding with sherry-whey must not be continued for long periods: usually a few days, or at most a week or ten days, is sufficient. To an infant six weeks old a tablespoonful can be given every half-hour or every three-quarters of an hour, and the amount and interval gradually increased till two ounces are taken every two hours. At any period of infancy it is seldom desirable to exceed two to two and a half ounces of this food, but in exceptional cases as much as three ounces can be given at a feed to an infant of six months.

[1] *Brit. Med. Jour.* Oct. 6, 1906; [2] *Med. Press*, Aug. 28, 1907; [3] *Arch. Ped.* Dec. 1906, p. 881; [4] *Pediatr.* Mar. 1907, p. 179; [5] *Brit. Med. Jour.* Sept. 21, 1907, p. 731; [6] *Pathologie Infant.* Aug. 1906, in *Arch. Pediatr.* June, 1907, p. 474; [7] *Rev. Mens. des. Mal. de l'Enf.* Aug. 1906, in *Arch. Pediatr.* Mar. 1917, p. 227; [8] *Brit. Med. Jour.* Oct. 6, 1906; [9] *Clin. Jour.* Dec. 19, 1906; [10] *Pediatr.* Sept. 1906, p 419; [11] *Ther. d. Gegenw.* in *Arch. Pediatr.* Feb. 1907,

p. 91 ; [12]*Brit. Med. Jour.* Oct. 6, 1906, p. 931 ; [13]*Brit. Jour. Child. Dis.* Mar. 1907, p. 88 ; [14]*Centr. f. die Ges. Therap.* xxii. 10, in *Arch. Ped.* Sept. 1906 ; [15]*Clin. Inf.* Aug. 1906, p. 475, in *Brit. Jour. Child. Dis.* Feb. 1907, p. 81 ; [16]*Pediatr.* Aug. 1907, p. 455 ; [17]*Med. Press* (loc. cit.) ; [18]*Arch. Ped.* Jan. 1907, p. 57 ; [19]*Pediatr.* Dec. 1906, p. 744 ; [20]*Lancet*, Jan. 12, 1907.

DIPHTHERIA.

E. W. Goodall, M.D.

Etiology.—An account of a milk-epidemic of diphtheria, in which some of the cows from which the milk was obtained were found to be affected with ulceration of the udder, has been furnished by A. Ashby.[1] The epidemic occurred during August, 1904, in Twyford and Ruscombe, Berks. Seventy-five persons were affected, but there was only one fatal case. Some four or five months previously there had been an outbreak of eighteen cases with three deaths in the same villages. Diphtheria bacilli were obtained from the fauces of some of the patients in the August outbreak, and in some cases there was characteristic paralysis. From the teats of two of the affected cows organisms were isolated which morphologically and physiologically proved to be the diphtheria bacillus ; but the organisms isolated from the milk of these cows only resembled the diphtheria bacillus, and did not satisfy the ordinary tests characteristic of that organism. Ashby's paper is accompanied by some excellent photographs of the diseased udders.

Treatment.—The prophylactic use of antitoxin in cutting short an outbreak of diphtheria in a school has been well shown by what occurred at the Brentford Union Schools at the beginning of 1907. On January 6th two cases arose, and although in every instance the patients were removed to hospital and disinfection practised, more children became affected, so that up to Feb. 10th there were sixty-six cases. At that time there were 251 children in the schools. They were all examined bacteriologically, and sixteen were found to have diphtheria bacilli in the fauces. On Feb. 11th and 12th all the children received hypodermically 500 units of antitoxin, and the sixteen just mentioned received 1000. A case of diphtheria occurred on Feb. 21st, another on the 27th, and two on March 2nd. A second dose of 500 units was then given to each child. No case of diphtheria arose till April 9th, when there was one ; there was one on April 12th and two on May 10th ; after that there were no more cases. There were no ill effects from the serum.[2]

References.—[1]*Public Health*, Dec. 1906 ; [2]Norton, *Lancet*, July 13, 1907.

DRACONTIASIS (Guinea-Worm Disease).

J. W. W. Stephens, M.D.

R. T. Leiper,[1] as the result of his researches in Accra, Gold Coast, states that the life history of the guinea-worm is as follows : (1) The young embryos are discharged from the uterus, which prolapses through an opening outside the circumoral ring of papillæ as soon as the skin of the leg is broken through, and before the wound has become markedly septic ; (2) They enter the body cavity of *Cyclops sp.* in a few days.

and in five weeks have become mature larvæ; (3) These are set free from the *Cyclops* by the action of the gastric juice, and reach the connective tissues by penetrating the gut wall.

Reference.—[1]*Brit. Med. Jour.* Jan. 19, 1907.

DRACONTIASIS.

(*Vol.* 1895, *p.* 273)—Vinze makes an **Incision** beside the worm and dissects it out. Roth, in chronic cases, opens the burrows, and plugs them with **Carbolized Lint.** Others say that the worm may be killed *in situ* by injection of 1–1000 **Sublimate Solution** into and around the parasite; the dead body is gradually absorbed.

DROPSY.

(*Vol.* 1907, *p.* 227)—Widal's suggestions as to a **Salt-free Diet** are as follows Bread must be made without added salt. Of meats, beef, mutton, and fowl are best; they must be fresh. Fresh-water fish are permissible, fried or boiled. Fresh eggs are to be eaten without salt: yolks are useful for making sauces. Fresh butter and cream are allowed, also saltless cheese. Rice is valuable. Vegetables without salt may be used, potatoes, green peas, carrots, leeks, beans, celery, endive, lettuce and celery, also salads. Vegetable soups may be taken, but meat broths are unpalatable without salt. Pastry, sweetmeats, fruit, and chocolate are recommended. Water, mineral waters, beer, and even wines, may be taken; also tea and coffee.

DRUG HABIT.

(*Vol.* 1900, *p.* 277)—McLeod treated morphine, chloral, and cocaine cases with **Sodium Bromide.** Give it every two hours, during the daytime only, for three days The first two doses each day should be ʒij, subsequent ones ʒj. Stop chloral on the second day, morphine and cocaine on the third, if the patient sleeps well. Keep bowels and bladder emptied, give solid food as soon as possible, and encourage exercise. Keep a nurse on duty day and night for three weeks.

DUODENAL ULCER. (*See* Stomach, Surgery of.)

DYSENTERY.

J. W. W. Stephens, M.D.

W. H. C. Forster[1] records five cases of dysentery (bacillary) successfully treated by means of killed cultures of *B. dysenteriæ* (Shiga). The vaccine consists of a dead emulsion of the bacilli in normal salt solution to which 0·5 per cent carbolic acid has been added. The cultures are twenty-four hours old, and are killed by heating to 60° to 63° C. in a water bath for twenty minutes.

Amœbic Dysentery.—W. R. Moulden,[2] from a study of five hundred cases of amœbic dysentery, advocates the use of **Copper Sulphate Irrigations** in the treatment of this form of the disease. The following is the mode of procedure: The buttocks are raised about a foot above the level of the shoulders, and the colon is thoroughly irrigated by means of a double-flow colon tube, with sterile water, until the washings are quite clean. After draining off the water the bowel is slowly filled with copper solution, by keeping the reservoir at first at the level of the anus, and then slowly raising it as the gut gets accustomed to the pressure. Such an injection is generally retained for twenty minutes. Two injections are given daily at intervals of twelve hours. Before this procedure, at 2 a.m. the patient is given 50 cc. (about 1½ oz.) of a saturated solution of magnesium sulphate, in order to clean the gut. It is advantageous to use very hot irrigations, 106° to 110° F. The strength of the copper solution should not be greater than 1–6000.

H. E. Banatvala[3] publishes two native Indian remedies for acute dysentery (? variety): (1) The juice of the leaves of **Jasminum sambac,** known in Bombay as "mogra," and in Bengal as "bal-phal," "motiya," "mogra." Pound up 7 leaves in 1 oz. of water, and add sugar to taste. One dose every morning on an empty stomach for three or four days. (2) "Chinai Sakkar" (**Sugar**) 4 oz., whole **Cardamoms,** half a tola (1 tola = 11·66 grams), water 8 oz. Dissolve the sugar in water, shell and pound the cardamoms, and add to the solution. Boil over a fire for five minutes, cool, and give it in one dose. For an adult, two doses a day. The author states that in one case where everything else had failed, it "acted like a charm"!

Capt. Tucker, I.M.S.,[3] recommends the treatment of chronic sloughing dysentery by **Appendicostomy** in preference to colostomy. The appendix was exposed, and the cæcum sutured to the peritoneum of the anterior abdominal wall, the appendix projecting three-quarters of an inch outside the wound. Four days afterwards the top of the appendix was cut off, a No. 4 rubber catheter was introduced, and 73 oz. of a 1–400 solution of **Protargol** were injected. These were continued daily, and shortly afterwards normal stools were passed.

L. Rogers[4] discusses the diagnosis and treatment of the presuppurative stage of amœbic hepatitis. He defines the condition as one of a fever of a chronic intermittent type, with no definite symptoms of hepatitis, and rarely with any dysentery. Before definite clinical symptoms of suppuration in the liver appear, weeks, or even months, of fever occur, which is commonly ascribed to and treated as malaria, and even when acute symptoms of hepatitis are present it is frequently impossible to decide, without an exploratory operation, whether or no an abscess has formed. In such cases, the author considers that the occurrence of a leucocytosis, perhaps only slight, is of great diagnostic importance, and recommends the administration of **Ipecacuanha** as a routine treatment in cases of hepatitis. Not less than 20 to 40 gr. should be given once or twice a day, some twenty minutes after a dose of tincture of opium.

REFERENCES.—[1]*Ind. Med. Gaz.* June, 1907; [2]*Med. Rec.* July 28, 1906; [3]*Ind. Med. Gaz.* April, 1907; [4]*Pract.* June, 1907.

DYSMENORRHŒA. (*See also* Uterus, Diseases of.)

(*Vol.* 1903, *p.* 467)—If associated with anæmia, give **Iron** between the periods, as ℞ Ferri et Ammon. Cit., gr. x; Syrupi, ʒj; Aq., ad ℥j; three times daily after food; preceding this in cases where the tongue is foul with **Arsenic** and **Aloes.** A week before, and during the week of the period, stop the iron, and give the following thrice daily: Potassii Bromidi. gr. x; Tinct. Cimicifugæ, ♏xx; Tinct. Bellad., ♏x; Aq. Chloroformi, ad ℥ss. If this fails, give **Ext. Cannab. Ind.** gr. ¼, twice or thrice daily during the pain.

For *Spasmodic Dysmenorrhœa*—**Phenacetin, Antipyrin,** or **Ammonol** (loc. cit.).

EAR, DISEASES OF.

James Kerr Love, M.D.

External Ear.

Herpes Zoster Auris is the subject of an article by Derrick T. Vail,[1] who describes a case in which the first vesicle appeared on the posterior wall of the external auditory canal near the membrane. On account of the pain and mastoid tenderness, middle-ear trouble was suspected and the membrane incised, but without result. In two days the real nature of the case was displayed by the appearance of vesicles over the tip of the mastoid process and just below on the side of the neck. Vail's conclusions after perusing the literature of the subject are: (1) Herpes zoster auris is like true zoster elsewhere, a definite disease usually running an acute course; (2) It is very rare, but has been observed by a number of noted authorities; (3) It may involve the membrana tympani, as well as deeper parts of the auditory canal; (4) It is most likely an acute infectious disease, causing neuritis, the storm centre being in the ganglion of a sensory nerve; (5) Lymphadenitis is almost invariably present, and probably precedes the attack; (6) Treatment is of little avail; the disease usually runs a rapid course and heals spontaneously.

Another paper on "Herpetic Inflammations of the Geniculate Ganglion; a new Syndrome and its Aural Complications" is by Ramsey Hunt.[2] The syndrome is dependent upon a specific herpetic inflammation of the geniculate ganglion situated on the facial nerve in the depths of the internal auditory canal in the entrance to the Fallopian aqueduct. The simplest expression of this inflammation is to be found in the herpes zoster of the tympanum and the concha (this representing the zoster zone for the geniculate ganglion). Because of the proximity of the facial nerve and the terminations of the auditory nerve, neural complications are not infrequent—peripheral facial palsy, tinnitus aurium, deafness, and symptoms of Ménière's disease. The paper is accompanied by diagrams of the relations of the geniculate ganglion and of the terminations of the auditory nerve.

Furunculosis.—Shoengut[3] has been treating furunculosis of the external auditory canal by avoiding incision and applying tents steeped in **Acetous Solutions** and by subsequent **Pressure** of the boils, with the result that healing occurs in about seven days. He has been using **Bier's Treatment** by passive hyperæmia (a bandage being placed round the neck for eight to ten hours) with favourable results.

Perichondritis.—J. S. Fraser[4] narrates a case of perichondritis of the auricle following the radical mastoid operation. The patient was a man, aged twenty-six, who had chronic otorrhœa for five years, and the swelling of the auricle began at the unusually early period of the second day after the operation. On the sixteenth day a definite abscess formed on the anterior surface of the auricle. This was opened and packed, and in a week the auricle had shrunk to about its normal proportions. The resulting deformity was great, the upper half of the auricle presenting a wrinkled appearance and becoming diminished in thickness.

MIDDLE EAR.

Bacteriology of Acute Inflammation.—Goebel[5] reviewing Süpfle's studies on the bacteriology of acute middle-ear inflammation, points out that this author's observations confirm those of Preysing, that the middle ear is normally germ-free, that when it is diseased streptococci are found in the virulent cases, pneumococci in the benign types, and staphylococci in suppurative cases running a very slow course.

Otitis Media.—Peterkin,[6] discussing the treatment of otitis media, emphasizes the following points: (1) The membrane should be **Incised** early and freely; (2) **Peroxide of Hydrogen** is of great value in the treatment of suppuration; (3) The insufflation of boric acid or any other powder should not be entrusted to the patient; (4) The opening of the mastoid antrum should not be delayed until the patient's hearing is irreparably damaged; (5) Since the patient frequently does not know whether or not the ear is still discharging, the physician should make a point of satisfying himself that the condition is cured.

Otosclerosis.—Koerner[7] writes an interesting paper on "The Nature of Otosclerosis in the light of Heredity." The well-established heredity of this condition is proved by reference to the work of Liebenmann, of Denker, and of Bezold. Hammerschlag's interesting family trees are then referred to, and Koerner adds five trees of his own in which there were eight, eight, three, eight, and sixteen—altogether forty-three cases of otosclerosis. He explains the heredity of otosclerosis by Weissmann's theory, the condition not being a disease in the ordinary acceptation of the term, but the "determinants" producing a condition which is the last phase of a developmental process which normally does not occur in the petrous bone, but is the rule in other bones, and consists in a complete disturbance of the cartilage in the interglobular space and in the window margins, and the transformation of the compact bone into osteoid tissue and finally into spongiosa. Koerner combats Habermann's statement that the disease is usually syphilitic, and his view of the cause makes treatment hopeless. The only advice he can give to a patient afflicted with otosclerosis is not to marry.

Pierce,[8] under the title "Progressive Spongification of the Labyrinthine Capsule," discusses otosclerosis. The paper is chiefly a history of the work done by various writers during the past fifteen or twenty years (chiefly that of Denker), and its importance is increased by the discussion to which its reading gave rise at the meeting of the New York Academy of Medicine on January 10th, 1907. Neither the writer of the paper nor those who discussed it were able to add to our resources in the way of useful treatment. Phosphorus does no good, local massage and catheterization do harm, and we must attend to the general health of the patients and persuade them not to marry. No wonder the quacks get hold of them.

MASTOID DISEASE.

Mastoiditis in Diabetic Subjects.—Richards,[9] in a paper under this heading, gives four cases of his own, only one of which died after operation. His conclusions are based on these and on five other cases he has seen, all of which died after operation. He considers the mastoid invasion somewhat characteristic; although acute, there may be no pain, and the extensive destruction is evidence of the low vitality of the patient. The good effect of proper **Diet,** and of **Codeine** in increasing doses, was evident. The mortality was high, and occurred within a few days after operation from diabetic coma. Chloroform is a better anæsthetic than ether. Dyspnœa may occur before or after the operation, and is of the worst import in prognosis. Rapidity of operation is of the greatest importance. The amount of bone removed should be sufficient to go beyond the diseased area, and should include the dural plates, which will break down unless removed. It is bad surgery to sew up diabetic cases. As diabetes predisposes to vascular changes, a sinus thrombosis, unless there be symptoms pointing to septic absorption, should not be disturbed. A large amount of sugar—3 per cent or over,—a large quantity of urine, the presence of diacetic acid and acetone, the occurrence of severe general symptoms—thirst, exhaustion, loss of weight, boils, etc.,—are not of such serious prognostic import as the occurrence of dyspnœa before or after operation.

Meierhof[10] deals with the prognosis of mastoid operations in diabetic cases. The paper is chiefly historical, notice being taken of most records from 1860 till this time. His conclusion is that in acute purulent inflammation of the middle ear "the mastoid process should be opened when it is observed that there is no decided lessening of the secretion of pus within a few days, even in the absence of classical symptoms. . . . If we face a combination of serious symptoms when we first see the case, the patient should be given the opportunity of an operation at once, as otherwise there would be only one probable outcome."

Diagnosis of Temporal Bone Disease.—Whitehead[11] details some points in the diagnosis of the complications of temporal-bone disease, based upon a study of 135 fatal cases. These are taken from 892 cases of temporal-bone disease which have been operated on in the General Infirmary at Leeds during the last fifteen years. No striking or epoch-making conclusions are attempted, but the series is worthy of study, because of the large number brought together and of the care with which symptoms and signs have been noted. Examination of the cerebrospinal fluid, obtained through a lumbar puncture, and of the blood were made in a number of instances, but were never found to be of diagnostic significance in the early stages of those cases in which the diagnosis was uncertain. Positive indications were only obtained when the diagnosis was beyond doubt.

Mastoiditis followed by Meningitis.—Bennett[12] narrates a case of symptomless mastoiditis followed by meningitis and death. The patient was a man of fifty-seven. He took influenza in October, 1906; on November 10th the left membrane was reddened and bulged in the posterior superior quadrant, but there was no mastoid tenderness, no perforation, and no fever. There was, however, great deafness. Operation on both mastoids was done on January 7th because of the nausea, vomiting, vertigo, and a rise of temperature to 101°. Extensive caries of the left temporal bone was found. Bennett regrets that he did not do a lumbar puncture or make a leucocyte count. The writer would add that the lesson of the case is that a reddened bulging membrane should always be incised, even in the absence of fever and mastoid tenderness.

Blood-Clot Dressings.—Blake,[13] in a long paper, gives the history of the blood-clot as a primary dressing in mastoid operations. This plan of dressing followed Schede's investigations upon blood-clot filling in operations on the long bones. Blake concludes that the mastoid process, when the diseased contents have been thoroughly evacuated, forms a suitable cavity for this form of dressing, and that even if the clot break down no harm has been done and no time lost; the middle ear should be separately drained.

Sprague[14] deals with the same subject, and gives his results as follows: "Of the 186 acute cases operated upon, only 64 per cent were considered favourable for blood-clot healing—54 per cent for the typical and 10 per cent for the drain method. Of the 54 per cent considered proper cases for the typical method, 68 per cent were successful, being healed in from seven to fifteen days, and the remaining 32 per cent, while not perfect successes, were healed in 18 days and less. This shows, I think, that blood-clot healing has a place in mastoid surgery in selected cases, and even when not wholly successful the time of healing is greatly shortened, the pain of dressing decidedly lessened, and the resulting scar not noticeable."

Tympanomastoid Exenteration.—Reik[15] asks, "When shall we advise tympanomastoid exenteration in the treatment of suppurative otitis media, and in what percentage of cases may we expect a cure?" In answering these questions, Reik on the whole tends towards conservatism, and formulates his answers in the following rules:—

1. Broadly speaking, practically every case of suppurative otitis media is assumed to be susceptible of cure by one means or another.
2. Every case of chronic suppurative otitis media, without symptoms of intracranial invasion, should be treated patiently and persistently for a reasonable length of time, but not indefinitely, by well-directed efforts at cleanliness and antisepsis through the external auditory canal. When it becomes evident that these simple measures or minor operations cannot cure disease, tympanomastoid exenteration should be advised, unless in a given case there exists some special reason of socio-economical character that justifies delay and the risks of the disease.
3. The clinical evidences of an inveterate purulency that may help one to decide the question of when to recommend operation are: the finding of cholesteatomatous masses, epithelial cells, or bone-dust in the washings from the middle ear, the tracing of the source of pus to the mastoid antrum or labyrinthine capsule, or the existence of granulomas springing from carious areas of the tympanic wall which cannot be directly inspected and treated.
4. The possible dangers of the operation are believed to be far less than those of the disease.

5. The patient should be told that not every case is curable, even by an operation (the percentages of cures in the obstinately chronic cases probably approximating 70 per cent), that the hearing power will probably not be improved and may be somewhat impaired, but that the serious nature of his disease warrants surgical intervention as a prophylactic measure.

6. Every patient upon whom an operation of tympanomastoid exenteration is contemplated should be most carefully studied for a considerable period of time, in order that the slightest evidence of latent meningitis or purulent labyrinthitis may be detected, and when there exists any reason to suppose that the disease has extended beyond the bounds of the tympanic cavity, the patient or his guardians should be told that an element of danger attends the operation. The possibility of post-operative complications cannot be ignored, and the surgeon must safeguard himself.

Sarcoma simulating Mastoiditis.—Walker Downie[16] reports a case of sarcoma of the temporal dura mater which simulated a suppurative mastoiditis. The case occurred in a child aged twenty-one months; there was right facial paralysis, copious discharge from the right ear, and the projection of a fleshy mass from the right meatus. Twice the growth was microscopically examined and declared to be a rapidly growing granulation tissue. At the post-mortem examination the tumour was found to be a sarcoma of the mixed-cell type, originating in all likelihood in the dura mater over the tegmen tympani.

At the Exeter Meeting of the British Medical Association, Milligan[17] attempted to give precision to our methods of treatment by the study of the bacteriology and cytology of ear discharges. He regards diplococci as the most virulent of organisms; next in order come streptococci, whilst staphylococci are of much less virulence, but often most troublesome to dislodge. By cytological examination he claims that chronicity, in the scientific sense, may be shown to exist at an early stage, and he summarizes his views thus: "The discovery in the discharge of lymphocytes and epithelioid cells is presumptive evidence of granulation-tissue formation; of lymphocytes, epithelioid cells, and myelocytes, of an osseous lesion; of lymphocytes and acid-fast squames, of cholesteatomatous changes; whilst the presence of lymphocytes, epithelioid cells, myelocytes, and giant cells, is indicative of tuberculous disease of the temporal bone." Milligan states: "My experience has been that when smears taken from the deeper regions of the epitympanum reveal large numbers of lymphocytes and myelocytes, together with infected 'acid-fast' squames, the only treatment of permanent value is the performance of a Küster, a Stacke, or a Schwartze-Stacke operation. Where, on the other hand, lymphocytes are sparingly present, where there is a generous leucocytosis and an absence of myelocytes and acid-fast squames, the removal of the ossicular chain, with or without the removal of the outer attic wall, is a procedure well worth trying, and likely to be attended by successful results." Milligan has changed his opinion as to the value of ossiculectomy, because so many of these cases have in his hands required the more radical operation to be done subsequently.

Kerr Love[18] contributes a paper "On the Treatment of Chronic Middle-Ear Suppuration in the Light of the Pathological Findings in Fifty Cases (fifty-one ears) of Mastoid Operation." In twenty cases the operation (radical) was performed for discharge which could not be stopped by other means. In four of these ossiculectomy had been performed already. In thirty-one ears there was mastoid tenderness, or headache, or both, in addition to discharge. In forty-six of the cases the radical operation was done, in five the partial operation. In contrasting ossiculectomy with the mastoid operation, the statement is made: "It is true that some cases refuse to heal after either or both operations, but even if a little discharge be left after the radical mastoid operation, the patient is in a much safer position than he who, having had his ossicles removed, has a little discharge left which *may proceed from diseased products pent up in his unopened mastoid cells.*" The paper is an attempt to show that if the nature and source of the discharge, and the occurrence of mastoid pain, be carefully studied, the indications for or against operation will seldom be wanting. In none of the fifty cases was recovery at all probable without opening the mastoid process. A table of the findings in each case is given.

Charles Heath[19] writes on the cure of chronic suppuration of the middle ear without removal of the drum or ossicles, or the loss of hearing. Three years ago Heath wrote on "The Restoration of Hearing after Removal of the Drum and Ossicles by a Modification of the Radical Mastoid Operation for Suppurative Ear Disease." Heath's present operation is said to be a development of his former one, which was really a Stacke's operation. He proposes to make the routine treatment of chronic middle-ear suppuration the drainage or "elimination of the antrum, the danger zone," and to leave the bridge, the ossicles, and the membrane, which will, he states, then nearly always become healthy. Improvement in hearing will also follow. This operation may be useful in a minority of cases, and should be tried when the otoscopic appearances indicate healthy ossicles and the presence of a large part of the tympanic membrane.

But the average case which comes into hospital for operation has little membrane left, and very often no incus or malleus (see the writer's cases referred to above), so these are not present to be salved, and the hearing is so bad that it can hardly be further destroyed by operation. There is also the possibility, even when the mastoid cells have been thoroughly ablated, that a pus channel may be left in the tegmen tympani, and that the danger, which the radical mastoid most certainly avoids, may in the long run carry off the patient. But the writer, who has repeatedly done the conservative operation of Heath, believes that it may be advisable in some cases.

Stoddart Barr[20] records three cases of acute empyema of the mastoid antrum, in which rapid healing without deformity was got by plugging the mastoid cavity with the iodoform wax (bone-plugging method of Mosetig-Moorhof) about a week to ten days after the operation. Middle-ear discharge should be stopped before the plugging is done; and the method is not applicable to chronic cases, or cases in which the radical operation has been performed.

EUSTACHIAN TUBE.

Anatomy. — Sohier Bryant[21] contributes an article on "The Eustachian Tube: its Anatomy and its Movements, etc." The subject is well illustrated and carefully treated. The conclusion drawn is: "The physiological function of ventilating the tympanic cavity is accomplished mainly by the dilator tubæ or levator palati. The mechanism which allows the opening of the tuba auditiva is the backward pressure of this muscle on the angular process of the alar cartilage, which swings backward, upward, and inward on its superior attachment, dragging with it the floor of the tube and forming a triangular ostium."

Rinnes' Test.—Richard Lake[22] contributes a series of two notes on Rinnes' test, in which he points out the difficulty met with in separating the various forms of deafness occurring without middle-ear suppuration; and by way of increasing our knowledge and giving precision to our diagnoses, he divides Rinnes' test in six. It seems to the present writer that it is much more important to consider the whole case with regard to family history, condition of the nasal passages, otoscopic examination, etc., along with Rinnes' test, than to attempt an accurate diagnosis on the basis of any one tuning-fork test.

INTERNAL EAR.

Differences in the Labyrinth.—Albert Gray[23] contributes a series of interesting observations on the labyrinth in certain animals, in which he shows that differences in orders and species present differences in the anatomy of the inner ear of three main types: (1) Differences in the shape of the cochlea; (2) Differences in the size of the perilymphatic space of the semicircular canal: (3) Differences in the size of the otoliths.

Tinnitus.—Vansant[24] reports a case of persistent tinnitus which was cured by the application of **Heated Dry Air** under a pressure of twenty pounds through the Eustachian catheter. The symptom arose in connection with a nasopharyngeal inflammation, in which the nasal septum was deflected to the right, the turbinates of both sides were swollen, and the left tonsil was swollen and inflamed. The left tympanic membrane was also congested. Appropriate nasal treatment, followed by months of massage, politzerization, and catheterization, did not remove the distressing tinnitus. One application of the hot-air douche relieved the symptom, which did not return.

Yonge[25] contributes a paper on the causes and treatment of subjective noises in the ear. The paper is chiefly valuable as a résumé of what we know of the nature, prognosis, and treatment of tinnitus aurium

Labyrinthine Suppuration.—Eagleton[26] discusses the value of Von Stein's symptom in the diagnosis of labyrinthine suppuration. Von Stein's original work dealt, of course, with many equilibration tests, and included his goniometer—an instrument for demonstrating the angle of inclination at which a patient is able to maintain the erect posture. But the symptom emphasized in Eagleton's cases is the inability of patients with labyrinthine disease to jump backwards quickly two or three times in succession with the eyes closed. He found that this symptom was present in all his cases, and was more marked in the early stages of the labyrinthine involvement. Eagleton found, too, that the symptoms had a positive value in non-suppurative aural disease in which the labyrinth had become affected.

Krotoschiner[27] contributes a paper on the demonstration of disturbances of equilibrium in one-sided disease of the labyrinth. The paper is an exhaustive discussion of Von Stein's method, conducted at the Breslau Ear Clinic under the following heads: (1) Hearing tests by means of the Bezold-Edelmanner forks; (2) Static examination on a horizontal plane; (3) Static examination on an inclined plane by the goniometer; (4) Active centrifuging by the patient turning himself; (5) Passive centrifuging by means of a rotating disc about 5 ft. in diameter; (6) Dynamic examination (walking and jumping tests). Krotoschiner then gives his results, and compares them with other workers on the same lines. His practical deductions are chiefly these: (*a*) That a hearing relief constructed by means of Bezold's forks should be made; (*b*) That static examination does not always give definite results, but that it is of advantage; (*c*) Examination by the goniometer does not give definite results for diagnosis, but gives such remarkable results that it should be performed when possible; (*d*) Walking and jumping tests are very valuable. If jumping backwards with closed eyes can be done without disturbance, there is no extensive disease of the labyrinth; (*e*) Centrifuging does not give any practical results.

Hinsberg,[28] whose work on labyrinthine suppuration has been repeatedly referred to in the *Medical Annual*, contributes two valuable papers: (1) On the significance of the operative findings for the diagnosis of purulent inflammation of the labyrinth during exposure of the middle-ear cavities; (2) Indications for opening a purulently affected labyrinth. Hinsberg points out: (*a*) The difficulty of diagnosing a pus channel at the round window unless the promontory is also involved; (*b*) The ease and safety with which the promontory may be examined with a probe; (*c*) In examining about the oval window a fine anatomical forceps, and not a curette, is used. Hinsberg then deals with the appearances of a perforated external or horizontal semicircular canal—the canal most commonly involved in labyrinthine disease. He thinks that a perforation into the labyrinth through the oval window or the promontory usually means extensive destruction of the labyrinth, but that the external semicircular canal may be perforated with a very limited disease of the labyrinth. These he believes to exist much more commonly than is generally supposed, because they do not lead to death, whilst panlabyrinthitis leads to death by subsequent intracranial involvement, and the diseased condition is discovered on the post-mortem table. In his second paper the same author gives indications for opening a purulent labyrinth: "The operation, to my mind, is always necessary when an exact functional examination (deafness and symptoms of irritation, a defect of the vestibular apparatus) and the conditions found on exposing the middle-ear cavities, show us that extensive disease of the labyrinth is present. If the functional examination and the operation point to circumscribed disease of the semicircular canal, or if at operation a labyrinth fistula cannot be definitely proved, I think it is best to wait."

In view of the increasing interest displayed in labyrinthine suppuration and ossicular caries, the accompanying stereograms are introduced (*Plates* XII, XIII, XIV, XV).

Arteriosclerosis.—In the *American Journal of the Medical Sciences* for June, 1907, a notice of the work of Escat[29] on arteriosclerosis of the acoustic centres and of the labyrinth is given. Escat sets forth the proposition that "in the same way that a cortical centre of the brain, a pyramid of the kidney, an hepatic or splenic lobule, or a retina may suffer from arterial spasm on the cutting off of its nourishment, so may the labyrinth. The study of otitic arteriosclerosis is exactly homologous with that of the eye." Escat's theory is suggestive, and further clinical proof of its truth will be awaited with interest.

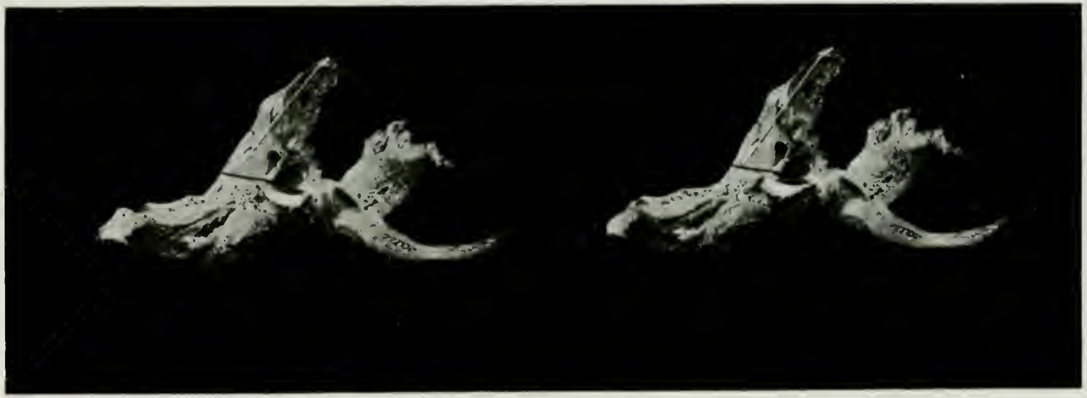
Diseases of the Ear in Children.

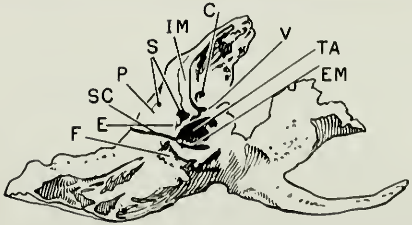
The Medical Examination of School Children.—Hartmann,[30] reporting on the method of examination of the ears of school children, divides hard-of-hearing children into three classes: (1) Those who hear whispered speech with the better ear at half a metre or less—the very hard of hearing; (2) Those who hear similarly at ½ to 3 metres—the moderately hard of hearing; (3) Those who hear whispered speech at 3 to 8 metres—the slightly hard of hearing.

In the *Medical Annual* for 1907 the writer[31] called attention to the action of the Government in the direction of making the medical examination of school children compulsory. Although the Bill in which this provision was embodied did not pass, it may be safely affirmed that no Education Bill of the future will fail to have compulsory examination as one of its provisions. In the meantime the meeting of the Second International Congress on School Hygiene in London has done much to outline the position and function of the doctor in the school. Many of the larger School Authorities have appointed physicians to examine the children of the elementary schools. It was seen that, roughly speaking, 20 per cent or over of the children of the poorer elementary schools suffer from deafness, and that in some cases this deafness is the cause of backwardness in class. It was also seen that much of this deafness was preventable, and a good deal of it

PLATE XII.

LABYRINTHINE SUPPURATION AND OSSICULAR CARIES.

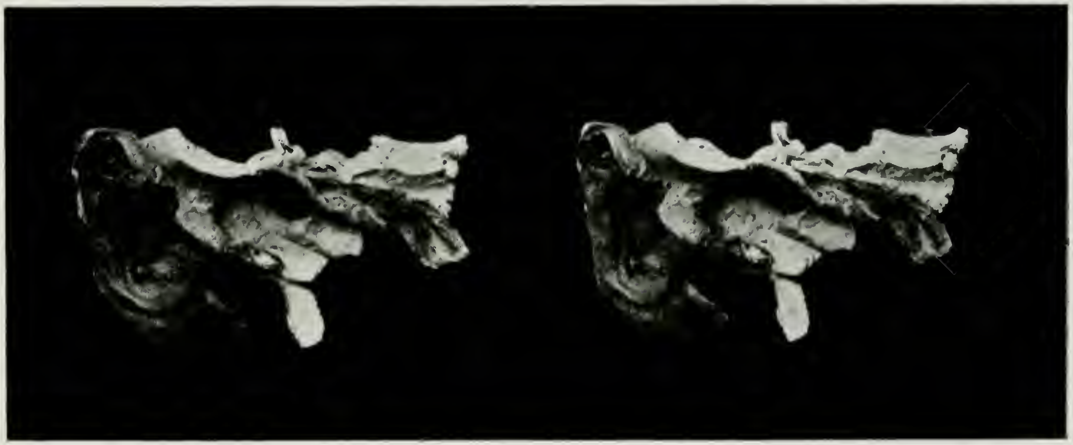


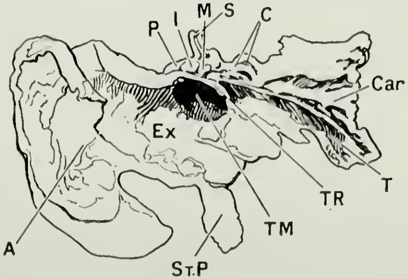


C.—Small part of basal turn of cochlea
E.—Ampullary end of external semicircular canal
F.—Vertical part of Fallopian canal
V.—Upper part of vestibule
TA.—Tympanic attic
EM.—External meatus
IM.—Internal meatus
S.—Superior semicircular canal
P.—Groove of posterior semicircular canal
SC.—Saw-cut

PLATE XIII.

LABYRINTHINE SUPPURATION AND OSSICULAR CARIES.

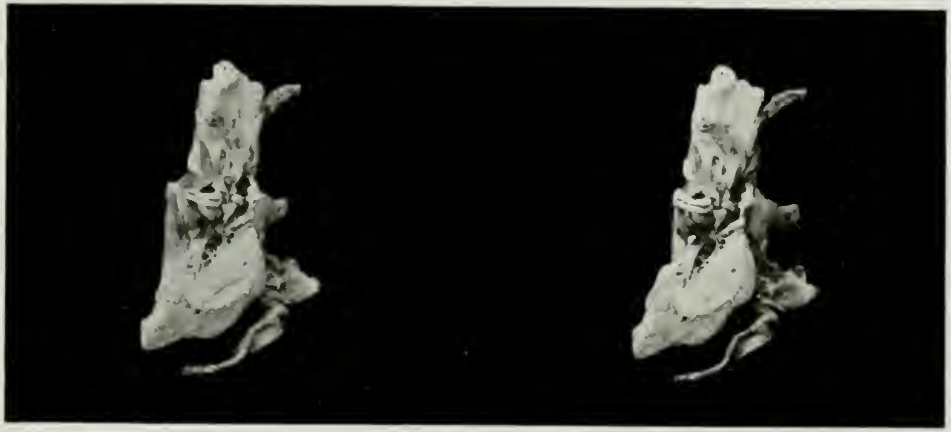


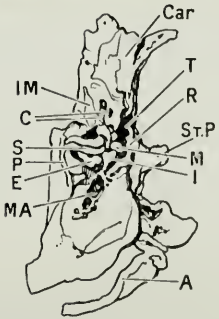


A. — Auricle; soft parts (shaded) have partly fallen away from bone
S. — Superior semicircular canal
P. — Posterior semicircular canal
I. — Incus
M. — Malleus
C. — Turns of cochlea
TM. — Tympanic membrane
TR. — Tympanic ring
T. — Eustachian tube
Car. — Carotid canal
St.P — Styloid process
Ex. — External auditory canal

PLATE XIV.

LABYRINTHINE SUPPURATION AND OSSICULAR CARIES.





IM. — Internal meatus
C. — Turns of cochlea
S. — Superior semicircular canal
P. — Posterior semicircular canal
E. — External semicircular canal
MA. — Mastoid antrum
St.P. — Styloid process
I. — Short process of incus
M. — Head of malleus
R. — Tympanic ring
T. — Tympanum
Car. — Carotid canal
A. — Auricle and soft parts detached from bone

PLATE XV.

POLYPUS GROWING FROM THE MALLEUS.

GRANULATION MASSES ATTACHED TO DISEASED INCUS.

curable by early treatment. The present writer would ask: (1) How many children in the elementary schools are stupid or backward in class because of deafness? and (2) Is it not time that the education of the deaf and dumb should be undertaken by the teacher only after deaf-mute children have been clinically examined and scientifically classified by the doctor?

In answer to the first question, some figures supplied to the writer by Dr. Hackwell Stewart, of Hanley, are instructive. Dr. Stewart states: "I examine only those children who appear to have some physical cause for backwardness in school work. Based on my last completed round of visits, my estimate is that 1·16 per cent of the 12,200 children in the Hanley schools have hearing defective enough to be a drawback, but not bad enough to be sent to a school for the deaf." Mr. Jones, of the London Council, has made the following enquiry. Choosing three schools in different parts of London, with an aggregate attendance of 3,300, he asked the head teachers to state the number whom they thought were backward on account of defective hearing, but not bad enough for removal to a school for the deaf, and the returns show that 49, or about 1·5 per cent, of the children came under this category of hardness of hearing. In Glasgow, therefore, there are about 1,000 hard-of-hearing children in the elementary schools; in London about 5,000.

These percentages are not large, but they establish the fact that the hard-of-hearing children of the elementary schools who require separate educational treatment are about ten times more numerous than the deaf and dumb proper, and yet no arrangement of any kind exists at present to meet the needs of this large class of children.

With regard to the deaf and dumb themselves, the present writer contends that a scientific classification, based on the clinical examination of the deaf child, affords the only proper solution of the problems of deaf-mute education and the only prospect of bringing to an end the war which has waged for a hundred and fifty years between the manualists and the oralists.

Examination of the Ear in Fevers.—W. B. Hoag,[32] under the title "An Experience tending to Emphasize the Necessity for Routine Examination of the Ear-drums of Children with Fever," quotes the dictum that no examination of a sick child is complete until a thorough examination is made of the condition of the middle ears, and gives some cases of pneumonia in which recovery and resolution took place either when spontaneous rupture of the ear drums occurred or when paracentesis was done. The chief point made by Hoag is that pain is no necessary attendant on such an inflammation of the middle ear, and he advises the routine otoscopic examination at every visit to discover any reddening or bulging of the tympanic membrane. He urges immediate incision of the membrane whenever the evidence of ear inflammation is got. Hoag thinks many so-called cases of malaria, typhoid, influenza, etc., may be accounted for by what is discovered by the routine examination of the ears.

Aural Quackery.—The ablest exposure of the methods of the aural quack is written and published by Evan Yellon.[33]

References.—[1]*Laryngoscope*, Sept. 1906; [2]*Arch. Otol.* Aug. 1907; [3]*Deut. med. Woch.* 1906, No. 43; [4]*Scot. Med. and Surg. Jour.* Mar. 1907; [5]*Centr. f. Chir.* July 6, 1907; [6]*Scot. Med. and Surg. Jour.* May, 1907; [7]*Arch. Otol.* Oct. 1906; [8]*Ibid.* Feb.–April, 1907; [9]*Ibid.*; [10]*Ibid.*; [11]*Ibid.* Oct. 1906; [12]*Med. Rec.* April, 1907; [13]*Jour. Laryng. Rhinol. and Otol.* Nov. 1906; [14]*Laryngoscope*, Sept. 1906; [15]*Amer. Jour. Med. Sci.* Aug. 1907; [16]*Pract.* Nov. 1906; [17]*Brit. Med. Jour.* Oct. 12, 1907; [18]*Glasg. Med. Jour.* Nov. 1907; [19]*Lancet*, Dec. 24, 1904, Aug. 11, 1906, April 27, 1907; [20]*Glasg. Med. Jour.* Sept. 1907; [21]*Med. Rec.* June 8, 1907; [22]*Lancet*, Feb. 22 and June 1, 1907; [23]*Jour. Laryng. Rhinol. and Otol.* Aug. 1906; [24]*Amer. Med.* Nov. 1906; [25]*Clin. Jour.* Sept. 4, 1907; [26]*Arch. Otol.* June 1907; [27]*Ibid.* Aug. 1907; [28]*Ibid.* June, 1907; [29]*Ann. de Mal. de l'Oreille et du Larynx*, 1906, vol. xxxii. 325; [30]*Münch. med. Woch.* June 11, 1907; [31]Kerr Love, *Med. Ann.* 1907, p. 247, *Glasg. Med. Jour.* Nov. 1906, and Jan. 1907, *Jour. Laryng. Rhinol. and Otol.* Sept. 1907; [32]*Amer. Med.* June, 1907; [33]The Celtic Press, London, 1906.

ECLAMPSIA. (*See* Pregnancy, Disorders of.)

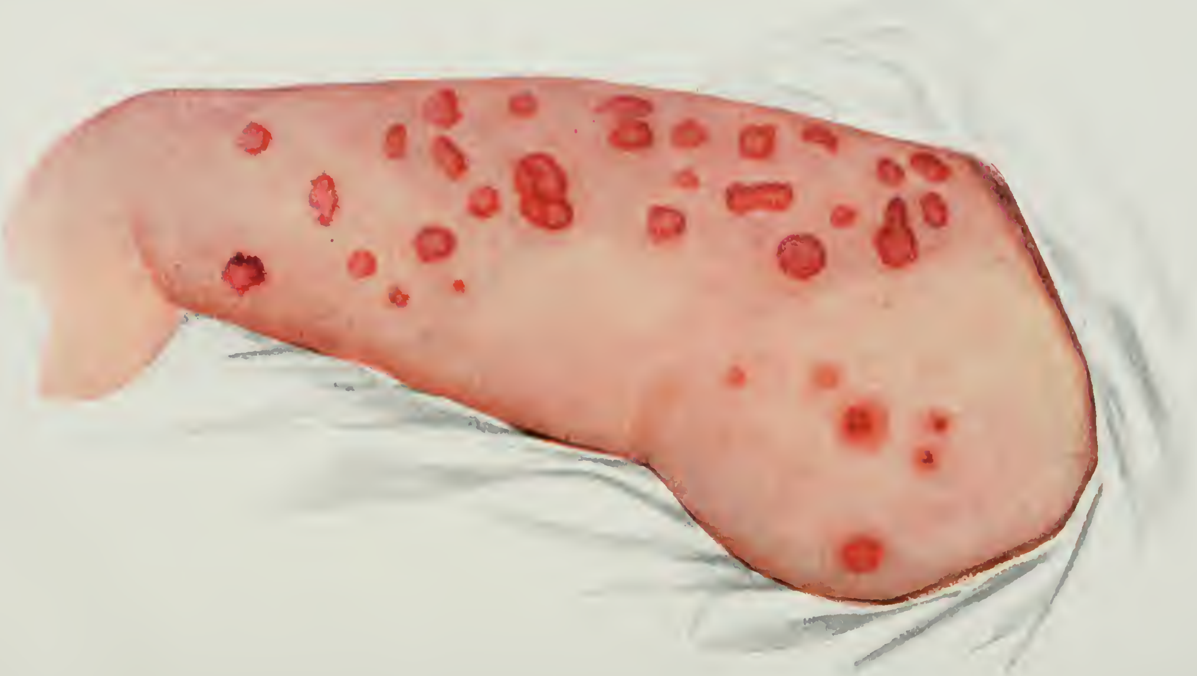
ECTHYMA, VACCINIFORM.

E. Graham Little, M.D., F.R.C.P.

Colcott Fox[1] draws attention to the neglect which has overtaken this form of disease in English text-books; the clinical type was however separated in France as early as 1887 under the names of "erythème vacciniforme infantile," "syphiloïde vacciniforme infantile," "herpes vacciniforme," etc. The characters distinguishing it were (1) Occurrence of the eruption in the first months of life; (2) Ready curability under antiseptic conditions; (3) Sites of predilection around the genital organs and anus; (4) Special morphology of lesions; (5) Autoinoculability, as tested by Jacquet, who actually effected an inoculation on the arm of an infant who had these lesions about the anus. The autoinoculability is to be inferred by the presence of lesions on opposing surfaces, e.g., in the thigh, the labia majora, prepuce, etc. Many of the elements of the eruption simulate vaccinal pustules and scabs, commencing as an erythematous patch, becoming papular, and the centre vesicating and forming an umbilicated scab. These lesions are not syphilitic, though they may occur in syphilitic children, and closely simulate that disease. Adamson examined bacteriologically one of the five cases recorded by Fox in this paper, and found in a first examination streptococcus and staphylococcus mixed; in a second examination of an unbroken vesicle, pure streptococcus. Fox refers to a case, as possibly of the same type, shown by me in 1903 to the Dermatological Society of London, with the diagnosis of "dermatitis herpetiformis"; in an unruptured vesicle of the case I twice found pure streptococcus. But this case has persisted for four years with recurrent crops of vesicles exactly like dermatitis herpetiformis, and criterion No. 2 is certainly not satisfied by this history.

The plate is from a water-colour of a case which was shown by me at the Dermatological Society, London, in January, 1901, and which

PLATE XVI.



ECTHYMA, VACCINIFORM.

for want of a better name I labelled "dermatitis gangrænosa infantum." It was certainly an instance of the disease under consideration. The lesions and pustules developing into ulcers were very numerous, and healed completely under boric-acid baths; but the child unaccountably died two weeks after apparent recovery from the skin lesions. A culture from one of the ulcers gave almost pure growth of staphylococcus, and a section of an early pustule showed the contents to be chiefly leucocytes and staphylococci.

REFERENCE.—[1]*Brit. Jour. Derm.* June, 1907, p. 191.

ECZEMA.

E. Graham Little, M.D., F.R.C.P.

Graham Chambers[1] takes the view that at present it is impossible to regard eczema as one disease, and he proposes constituting a group of diseases to which the term "the eczemas" should be applied; these are to include the cases of traumatic and irritative dermatitis. With this conception of the subject he considers the causes under the following headings: (1) Hereditary predisposition; (2) Disturbances of nutrition and metabolism; (3) Local irritation. The inheritance of an "arthritic diathesis," which is supposed to explain the occurrence of eczema, predisposes the unhappy possessor to migraine in his youth, to asthma, bronchitis, and eczema in early adult life, and to gout in middle and old age; as a slight compensation for all these ills, he is rarely subject to tuberculosis. Of these associations the only one for which the writer found evidence in his statistics was for the association of asthma and eczema.

Disturbances of nutrition are less easily identified as causes of eczema; Graham Chambers thinks that over-feeding is a definite factor in the causation of infantile eczema, and has noted improvement in cases concurrently with diminution in weight.

External irritation is, however, the commonest factor in the development of the eruptions. The so-called traumatic eczemas are indistinguishable histologically and clinically from eczema of apparently non-traumatic origin, and there is no useful object in separating these conditions. Of the commoner irritations, bacteria probably are the most important, especially in the complications which may ensue upon their appearance.

Guinon and Pater[2] record three cases in children suffering from impetiginous eczema in whom albuminuria and hæmaturia were present in two of the cases, and in whom these symptoms disappeared with the treatment directed to improvement of the skin. The third child died with symptoms of anuria and pulmonary troubles.

TREATMENT. — The three indications are: (1) To reduce the inflammation; (2) To soothe and protect the skin, and particularly the mucous layer; (3) To bring about normal keratinization of the epidermis. Aqueous lotions, if constantly applied, are useful, and Chambers has found **Normal Saline Solution** of service, applied continuously in the form of compresses soaked in this solution and covered with oiled silk. **Boracic Acid** may be added to the saline solution in the proportion of 1–60. "As soon as the skin, by its colour, smoothness, the absence of crusts, etc., shows diminished inflammation and improved keratinization, this dressing is discontinued and a soothing ointment applied, such as **Lassar's Paste.** Subsequently a mildly-stimulating ointment may be used."

Fatal Eczema in Children.—Cases of eczema, ending in sudden or rapid death, are sufficiently uncommon to render worth recording two such cases, reported by Maille[3] in his inaugural thesis. In the first, a child with extensive eczema and concurrent diarrhœa and enlargement of the liver died in coma, accompanied by subnormal temperature (31·05° C.). Post mortem, no changes were found, except in the liver and kidneys; consisting, in the former, of granular and fatty degeneration, with partial necrosis. In the second case, an infant of eight months, who had general eczema, which was treated with wet dressings, died with convulsions. Here, too, fatty and granular changes were found in the liver. Perusal of the literature leads to the conclusion that in these fatal cases hepatic and renal changes are so frequently recorded as to suggest the explanation that gastro-intestinal infections, and their resulting effect on the liver and kidneys, pave the way for a secondary infection "per viam cutis," which is the ultimate cause of death.

REFERENCES.—[1]*Brit. Med. Jour.* Oct. 6, 1906; [2]*Rev. Mens. d. Mal. de l'Enf.* Nov. 1906; [3]*Sem. Méd.* May 29, 1907.

EMPHYSEMA.

(*Index of Treatment, p.* 271)—*Climatic:* The South-west Coast of England, parts of Egypt, Algiers, and the Italian Riviera, are recommended as being warm and free from wind. Moisture suits some patients. *Medicinal:* ℞ Potassii Iodidi et Ammon. Carbonat., āā gr. iij; Potass. Bicarb., gr. xv; Aq. Camph., ad ℥j; three times daily; to which may be added Tr. Belladonnæ, ♏ v, if there is spasm of bronchi. Cardiac failure may supervene and will call for **Venesection,** followed by **Digitalis.** *Physical:* **Compressed-Air Baths** are of value, but there are not many in England.

ENURESIS.

(*Vol.* 1907, *p.* 259).—A cause (threadworms, phimosis, vulvitis, adenoids, urinary hyperacidity, epilepsy, etc.) should be discovered and treated. Keep the bowels regular, and wake the child twice each night, so as to keep the bladder emptied. Forbid sweets, tea, and coffee. For cases with acidity of the urine, give **Potassium Citrate.** Give **Belladonna** in increasing doses over a long period, beginning with ♏ x of the tincture thrice daily. Other drugs mentioned are **Boric Acid, Rhus Aromatica,** and **Urotopin.** Finally, **Electrical Treatment,** or removal to new surroundings, may be tried.

EPIDIDYMITIS.

(*Vol.* 1895, *p.* 213)—When this is due to gonorrhœa, pain is severe and calls for relief. In some cases **Cold** locally (in the form of ice) is useful, in others **Warm Compresses.** Balzer and Lacour recommend an ointment of **Guaiacol,** 2 to 5 parts; Vaselin, 30 parts: to be applied twice on the first and once on subsequent days till all pain is gone. (*Vol.* 1894, *p.* 249)—**Nitrate of Silver** ointment, 10 per cent, is also used locally.

EPILEPSY.

Purves Stewart, M.D.

From a careful study of thirty epileptic patients in the Oxford County Asylum, Bennion[1] concludes that **Strontium Bromide** as a rule is more efficacious in controlling the number and severity of the fits than the mixed bromides of sodium and potassium. He finds that the strontium salt rarely causes depression, whilst in all his cases rashes remained absent. Strontium bromide seemed to act with special efficacy in female patients, and in them the mental condition appeared to improve, but in male patients no perceptible influence was produced on the maniacal attacks. The average dose given in these cases was 30 gr. thrice daily.

Continued experience of a *salt-free diet* in the treatment of epilepsy confirms the views expressed by myself in the *Medical Annual* of 1904, as to the efficacy of the withdrawal of sodium chloride in rendering the organism more susceptible to the action of bromides. Gordon,[2] of Philadelphia, recently treated a series of thirty-seven epileptics on a salt-free diet, and found that both the frequency and severity of the attacks were diminished. It is more difficult to get children to persevere with a salt-free diet than in the case of adults. owing to the aversion for saltless food which is soon experienced ; but if the patients can be encouraged to persevere, the epilepsy is generally mitigated. In view of the difficulty in inducing patients to continue with a salt-free diet, Voisin and Rendu[3] have resorted to an intermittent dietetic treatment, in which for ten days the patient takes no salt and no bromide, then for twenty days he resumes ordinary diet with bromides.

REFERENCES.—[1]*Lancet*, Jan. 5, 1907 ; [2]*N.Y. Med. Jour.* Oct. 20, 1906 ; [3]*Arch. de Neurol.* 1906, No. 129.

EPISTAXIS.

(*Vol.* 1899, *p.* 265)—Lake says, Never plug the posterior nares, but **Cauterize** the bleeding point (nearly always on the septum near the junction of skin and mucosa) with either galvano-cautery, chromic, or trichloracetic acid. Hutchinson (loc. cit.) recommends placing hands and feet in very hot water. (*Vol.* 1902, *p.* 278)—For the epistaxis of high arterial tension give **Nitroglycerin** or **Amyl Nitrite**. To such patients, **Calomel**, gr. iij to v, should also be given, and absolute rest secured : plug the anterior nares with gauze soaked in **Suprarenal Extract**.

EPITHELIOMA.

E. Graham Little, M.D., F.R.C.P.

Syphilis, in Jaboulay's[1] opinion, is the most frequent forerunner of epithelioma ; he records a case of a man who had suffered severe burns, and subsequently contracted syphilis, who seven months after developed an epitheliomatous growth in the site of one of the burns ; he considers that in this case syphilis paved the way for it. A second case is recorded of epithelioma occurring in the scar caused by vitriol-throwing eleven years previously.

Fournier[2] again insists upon the part of intermediary played by syphilis, in the form of leukoplakia, in preceding cancer of the tongue Leukoplakia, though due to syphilis, may be rendered more chronic and persistent by smoking, and this should be forbidden in all persons who have contracted syphilis.

Harlingen[3] finds **Caustic Potash** the most efficacious local application for epithelioma—better and less painful in its effects than arsenical pastes. The forms of epithelioma to be treated in this way are such as display small, well-defined, pearly lesions, from ½ to 2 cms. in diameter, chiefly found upon the face and adjacent parts. In larger lesions, caustic potash may also be used to soften the horny layer prior to using X rays.

References.—[1]*Gaz. d. Hôp.* Aug. 1, 1907; [2]*Bull. de l'Acad. de Méd.* quoted by *Ann. de Derm. et de Syph.* Nov. 1906; [3]*Jour. Cutan. Dis.* Aug. 1906, quoted by *Brit. Jour. Derm.* 1906, p. 58.

ERYSIPELAS.

The following are recommended for local application: (*Vol.* 1900, *p.* 196)—**Iodol in Collodion** (a 10 per cent solution). (*Vol.* 1903, *p.* 300)—**Ichthyol,** applied on a thin layer of wadding. Pure **Carbolic Acid,** followed by **Absolute Alcohol**—a painful method, but curing speedily. (*Vol.* 1900, *p.* 195)—**Metakresolanytol,** an ichthyol derivative. This is injected locally, as well as painted on. (*Vol.* 1900, *p.* 196)—For internal use **Sodium Benzoate** is recommended in the appended prescription: R Sodii Benzoatii, gr. xx; Mucilag. Acaciæ, ʒss; Syrupi, ʒj; Aquam, ad ℥j. To be taken every two hours in teaspoonful to tablespoonful doses.

ERYTHEMA AUTUMNALE (Harvest-Bug Rash).

E. Graham Little, M.D., F.R.C.P.

Thresh[1] is very familiar in Essex with an eruption which becomes epidemic during July and August, and which is ascribed to the harvest-spider or harvest-bug, although it is in reality due to a minute parasite of this insect, which has been ascertained to be the larva of the trombidium, and is found on green plants, on turnips, grass and corn, and by this means conveyed to the persons of human beings, more especially those with thin and delicate skins, and in these on the lower extremities. The larvæ may travel from the legs to the upper parts of the body, and they cling to the downy hair, at the base of which they may be found as small bodies of a brick-red colour. The most efficacious treatment is the application of **Benzine,** followed by warm baths. The parasites may be dislodged with a needle if in a part too delicate to treat with benzine.

Reference.—[1]*Lancet,* Nov. 10, 1906.

ERYTHEMA INDURATUM (Bazin).

E. Graham Little, M.D., F.R.C.P.

Magee Finny[1] reports an interesting case of erythema induratum in a young servant girl, aged eighteen, in whom the nodules of the disease occurred on the arms as well as the legs. She had enlarged glands in the neck. None of the nodules were ulcerated. The treatment consisted in keeping the patient in bed for ten days, the end of the bed being raised on blocks; the bowels were opened daily with an aloes pill. At first **Sodium Salicylate** and then **Quinine Sulphate** was given. The legs were gently rubbed in an upward direction and a Domette bandage applied. With this treatment the nodules became smaller and less deep in colour. She was then sent up into the mountains near Dublin; when she returned three months later, in accordance with her promise to come and have the enlarged glands removed, it was found that these had so greatly diminished in size as not to require operation, and the patient was better in every way.

Reference.—[1]*Med. Press,* Nov. 14, 1906.

ERYTHEMA INFECTIOSUM.

E. W. Goodall, M.D.

This is an infectious disease, of which an account is given by Ruhräh in Osler and McCrae's *System of Medicine.* It was first described by Escherich in 1896. Epidemics have been recorded in Austria and Germany. So far it does not seem to have been observed in the United Kingdom or America. It is clear from the account given that the disease is the same as that described in the *Medical Annual* for 1906, p. 321, under the name of megalerythema epidemicum.

ERYTHEMA NODOSUM.

Robt. Hutchison, M.D.

Odery Symes[1] thinks that there is a good deal of evidence in favour of the view that erythema nodosum is a specific, acute, febrile disorder, that after a prolonged incubation period and period of prodromal symptoms a specific rash appears, and that convalescence is accompanied by profound anæmia and malaise. He considers that its relation to acute rheumatism is still very uncertain.

REFERENCE.—[1]*Lancet,* Jan. 26, 1907.

ERYTHROMELALGIA.

(*Vol.* 1900, *p.* 258)—Medicinal, electrical, and physical treatments are, as a rule, unsatisfactory: hypodermic injection of **Morphia** and **Atropine**, twice daily, under the skin of the side of the foot, is said to have produced an almost complete cure in three weeks. (*Vol.* 1894, *p.* 259)—**Arsenic, Antipyrin, Antifebrin,** and the **Faradic Current** have been usefully employed in various cases.

EYE DISEASES. (*See* CATARACT, CONJUNCTIVA, CORNEA, EYE INJURIES, EYE MUSCLES, EYE IN RELATION TO GENERAL DISEASE, EYE, GENERAL THERAPEUTICS OF THE, GLAUCOMA, LACHRYMAL APPARATUS, OPTIC NERVE, REFRACTION, RETINA.)

EYE INJURIES.

A. Hugh Thompson, M.D.

What are the conditions that should decide a surgeon to advise the immediate removal of an injured eye, and under what circumstances ought he to try and save it? No more important and no more difficult question can be asked of the ophthalmic surgeon. Nor would the replies be by any means unanimous. The following are the indications laid down by Lawson[1] for **Immediate Excision:** (1) The complete destruction of the globe as a visual organ; (2) The presence of suppuration in or about the wound; (3) The presence of a foreign body impacted in the globe which cannot be removed, and about the ascepticity of which grave doubts are entertained; (4) Extensive and lacerated wounds of the ciliary body, accompanied by prolapse and leakage of the vitreous, especially if not seen within twenty-four hours of the injury, and especially also in cases when the other eye is healthy and visually good.

Most surgeons would agree with the above; yet Dunn[2] tells us that his practice is "never to resort to immediate enucleation, no matter how severe the injury may happen to be. By allowing a few days to pass over, we are enabled to glean some indication of what Nature intends to do in the case. But if after the expiration thereof no attempt at repair is evident, enucleation is carried out." The special danger of wounds in the ciliary region lies, as is well known, in the possibility that sympathetic (or as Dunn prefers to call it, infective) cyclitis will attack the second eye. The reason for this special danger, however, is not any mysterious "sympathy" between the ciliary regions of the two eyes; but that this region, being highly vascular, with an extremely delicate distribution of nerves, forms a very perfect cultivation medium for micro-organisms. The question therefore is: whether or not it is possible to keep the wound aseptic. If it is, then the prospect of ultimate visual result being good depends on the condition of the cornea, iris, and lens. "If the central, or pupillary area of the cornea be intact, the iris and the lens sound, whatever the nature of the wound otherwise, the duty of the surgeon is to attempt to save the eye."

With regard to remedial treatment, there is a similar difference of opinion. Lawson advises that with a recent cleanly-cut wound of the globe, not too extensive in character, the wound should be closed with aseptic sutures. Dunn, on the other hand, advocates the "open treatment" with frequent douchings as the best chance for maintaining any wound aseptic, and gives instances of cases treated on this system with excellent results.

Sympathetic Degeneration.—According to Fergus,[3] a danger awaits the second eye in cases of severe injury to its fellow, quite apart from the inflammatory affections which are ordinarily termed "sympathetic"; this is a gradual and moderate contraction of the visual field, which does not go on to blindness, and which does not depend on any inflammatory trouble. The central visual acuity may or may not be affected. Fergus says his conviction is that a certain amount of this "sympathetic degeneration" in the second eye generally follows a severe injury to the first. Such a statement is referred to here in order that those who have the opportunity may test it. Of course cases of optic atrophy following neuritis must be excluded.

REFERENCES.—[1]*Brit. Med. Jour.* Dec. 29, 1906; [2]*Ibid.* July 27, 1907; [3]*Ibid.* Dec. 29, 1906.

EYE (General Therapeutics). *A. Hugh Thompson, M.D.*

Salts of Silver.—The relative merits of **Nitrate of Silver** and the newer organic compounds, especially **Protargol** and **Argyrol,** continue to be a subject of controversy. Darier,[1] a great champion of several of the newer methods in ocular therapeutics, has no doubts. He talks of the "*vieux et cruel nitrate d'argent,*" and declares that argyrol possesses all its good qualities with none of its bad, and ought always to be used in preference to it. This, however, is by no means the generally accepted opinion. In reply to a circular relative to the prophylaxis of ophthalmia neonatorum, sent out by Edgar[2] to a number of American physicians, 113 replied, and of these 103 thought that nitrate of silver was the most effective drug, only seven preferring argyrol or protargol. For this purpose a one per cent solution of the nitrate is sufficiently strong. In reply to a circular as to the general use of these drugs sent out by the Therapeutic Committee of the British Medical Association,[3] fifty-nine replied, the majority of whom stated that silver nitrate was most reliable, while protargol and argyrol were also admitted to be efficacious in most cases.

With regard to protargol in the treatment of gonococcic conjunctivitis, De Schweinitz[4] has a very poor opinion of it. He admits that it is an active bactericide, although not so active as nitrate of silver; also that it is far less irritating than the latter. His experience, however, is that it is far less certain in its action, and he has accordingly ceased to employ it in this disease. This, of course, goes directly contrary to the teaching of Darier.

It is necessary to reconcile the facts that on the one hand argyrol has been found experimentally a bacteriologically inert drug,[5] and that on the other hand it has been found by a good many observers to be as effective as the nitrate. The apparent contradiction is explained by De Schweinitz,[6] who thinks that the action of argyrol is mainly mechanical. It diffuses itself, and penetrating into all the crevices of the inflamed conjunctiva, floats the pus and mucus to the surface, from which it can readily be removed. The great thing, therefore, in treatment is frequent irrigation with boric or any other suitable solution, each irrigation being preceded by the liberal instillation of a 25 per cent solution of argyrol. For mild cases of ophthalmia neonatorum this may be all that is required, but for more severe cases, and for all cases of gonorrhœal conjunctivitis in the adult, a 2 per cent solution of the nitrate should be used once daily to the conjunctival surfaces, and neutralized immediately afterwards with normal saline solution.

The comparative efficiency of the three drugs was tested by Harrison Butler[7] at the British Ophthalmic Hospital at Jerusalem during the usual summer epidemic of acute mucopurulent conjunctivitis due principally to the Koch-Weeks bacillus. "The comparative tests, which were made in the summer of 1905, were carried out as follows: Cases were chosen in which the disease was in an early stage, and the two eyes were nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use" (weaker solutions of either one or the other drug). "The next day the eyes were inspected, and the differential treatment continued day by day until either one drug established a superiority or it was certain that both were having an equal effect." Out of forty-two cases in which silver nitrate in 2 per cent solution was tested against protargol 33 per cent, the latter proved superior in 62 per cent, the former in 10 per cent, an equal result in 24 per cent. Out of twenty-two cases in which protargol was tested against argyrol, both in 33 per cent solutions, protargol proved superior in half of the cases, and in the other half the effect was equal except in one case, where argyrol was superior. [The figures are misprinted in the article quoted, but on reference to the author, we understand that the facts were as stated.]

The conclusion is that in Jerusalem protargol is far the best drug for the treatment of acute mucopurulent conjunctivitis, and that argyrol is slightly better than silver nitrate. It does not by any means follow that the same relative value would hold good in the more dangerous purulent conjunctivitis.

Dionine.—This is one of the newer drugs that has certainly come to stay (cf. *Medical Annual*, 1904, p. 333, and 1907, p. 265). Its use, both to relieve deep-seated ocular pain and to promote the absorption of recent exudations in the cornea, conjunctiva, or anterior chamber, is probably to be explained by the chemosis which it produces, this giving to the eye, as Darier expresses it, a sort of lymph bath.[8] The main difficulty about its use is that it is always most effectual at first, and that after repeated instillations of a 5 per cent solution its action tends to become less. To overcome this difficulty, Von Arlt, of Vienna,[9] employs the powder by means of a little spoon containing 0·005 gram, which he introduces once a week into the eye, gently massaging it afterwards. By this means he maintains that an intermittent use of dionine will retain all its activity towards the patient, without any increase of dose, for many months. Many observers agree that dionine is of use in clearing up corneal nebulæ. Darier[10] employs it as a routine measure in cases of corneal ulceration as well as in many other conditions. The only condition which contra-indicates its use is a tendency to glaucoma (cf. *Medical Annual*, 1904, p. 333), and according to Senn[11] the drug is dangerous whether the glaucoma is primary or secondary to cyclitis. Discussing the manner in which dionine acts, he suggests that, by reason of the chemosis it causes, and the immense dilatation of the lymphatics, there is a definite blocking of the anterior ciliary veins from pressure on their walls by the engorged connective tissues, and that this effect is likely to be particularly dangerous when, as is certainly the case in glaucoma secondary to corneal disease, there is already some loss in the permeability of the channels of escape for the aqueous. A practical rule, which should never be forgotten, is that after the first instillation of dionine into the eye of any patient, the surgeon should always satisfy himself as to its effect some half-hour afterwards.

Other Recent Methods.—Among the more recent attempts to improve upon our present methods of treating eye diseases may be mentioned **Lactic Acid** in 50 per cent solution for cauterizing phlyctenular ulcers of the cornea (Sylla);[12] the **Subconjunctival Injection of Sterilized Air** (Terson, Koster, etc.),[13] principally for corneal ulcers—a method which is said to have a marked effect in relieving pain and photophobia; and a one per cent solution of **Pyoctanin** (methylene blue), which has powerful bactericidal properties, and is also used chiefly in severe corneal ulceration, dionine being employed at the same time to promote the flow of lymph.[14]

REFERENCES.—[1]*Rev. de Thérap.* April, 1907; [2]*Med. Rec.* Aug. 10, 1907; *Brit. Med. Jour.* June 22, 1907; [4]*Ther. Gaz.* Jan. 1907; [5]*Med. Ann.* 1907, p. 264; [6]*Ther. Gaz.* Jan. 1907; [7]*Ophthalm.* Jan. 1907; [8]*Ophth. Rev.*

June, 1907, p. 183; [9]*Ibid.* Aug. 1907, p. 244; [10]*Leçons de Thérapeutique Oculaire*; [11]*Ophth. Rev.* Aug. 1907, p. 245; [12]*Ophthalm.* Jan. 1907; [13]*Ophth. Rev.* June, 1907, p. 165; [14]*Ibid.*, p. 167.

EYE, THE (In Relation to General Disease).

A. Hugh Thompson, M.D.

Diagnosis of Tubercle. The Ophthalmo-reaction of Calmette.—Last June, A. Calmette[1] announced a new method of diagnosing tubercle which, if his results are confirmed, will be invaluable in doubtful cases. The method has been brought before the notice of English readers by Stephenson.[2] It consists in placing a drop of a 1 per cent watery solution of dried tuberculin in the eye of the patient. In the case of a healthy subject no result follows, but should the patient be tuberculous the eye becomes red, and in a few hours (maximum effect in six hours) presents the appearance of a more or less pronounced attack of mucopurulent conjunctivitis. All traces of inflammation are said to disappear in two or three days; the plan is said to be free from danger, and the discomfort caused to the patient but slight. In France the test has been applied both for general tuberculosis and for tubercle affecting the eye, and in England Stephenson has applied it to thirty patients suffering from some form of eye disease suspected to be tuberculous. His cases were as follows:—(1) Seven cases of phlyctenular disease, with a positive result in six; (2) Three cases of choroiditis, all with a positive result. In none of them was there any clinical evidence of tuberculosis elsewhere; (3) Eight cases of interstitial keratitis. In five of them there were obvious stigmata of inherited syphilis, and in none of them was there any reaction. In the remaining three the result was positive; (4) Three cases of episcleritis, only one yielding a positive result; (5) One case of tubercle of the iris, with a positive result; (6) One case of deposits in the cornea, with positive result: (7) Two cases of chronic irido-cyclitis, both with a positive result.

For details of these cases the original paper should be referred to. It is obvious that the subject is of such importance that we are certain to hear more of it.

Intra-ocular Tuberculosis.—In an exhaustive article, Treacher Collins deals with the pathology, diagnosis, and treatment of intra-ocular tuberculosis.[3] (Tubercle of the conjunctiva was referred to in last year's *Medical Annual.*) "There can be little doubt," he says, "that the most frequent way in which the eye becomes infected with tubercle is by way of the blood-stream. Tubercle bacilli carried by the blood would most likely be arrested, and so capable of starting foci of disease in the eye, where anastomoses of vessels occur, where its capillary plexuses are finest, and where abrupt bends take place in the vessels. Hence it is not surprising to find that in tubercle of the iris the nodules characteristic of the disease generally appear first near its pupillary or ciliary margins, i.e., in the regions of the anastomoses of its blood-vessels known as the larger and lesser circle of the iris. In the ciliary body the copious vascular plexus of the ciliary processes situated between their epithelial covering and the ciliary muscle is the site at which the affection most frequently starts. In the choroid the close capillary plexus forming its inner layer is the usual seat of the primary infection."

The most common seats of intra-ocular tuberculosis are the iris, the ciliary body, and the choroid. Wherever it occurs it assumes one of two forms, either scattered miliary nodules or a conglomerate mass resembling a tumour. Either form may give rise to more or less inflammation (iritis, cyclitis, or choroiditis). Interstitial keratitis may also occur secondarily to tubercle of the iris or ciliary body. Tubercle of other parts of the eye (optic nerve, retina, sclerotic) is rare.

Diagnosis.—"Tubercle of the iris is liable to be mistaken," says Collins, "for other forms of non-pigmented growth arising in that structure, such as simple granuloma, syphilitic nodules, the nodules of ophthalmia nodosa, the tubers of leprosy, or sarcoma." The diagnosis may be difficult, and in many cases depends chiefly on considerations other than the actual appearance of the tumour itself. Thus a simple granuloma can only arise after a wound; syphilitic or leprous disease is attended by other symptoms than the ocular ones; and in the cases of syphilis the effect of the specific remedies may be a material element in the diagnosis. A leucosarcoma of the iris might be mistaken for a solitary mass of tubercle, and the following two points are important: (1) That tubercle is generally located either at the ciliary or the pupillary margin, whereas a sarcoma may start at any part; (2) That a tuberculous mass is devoid of blood-vessels, whereas in sarcoma they may be fairly numerous.

"The diagnosis of the tuberculous or non-tuberculous character of patches of effusion into the choroid, when there is no evidence of tubercle, and when no history of syphilis can be obtained, is," says Collins, "attended by much uncertainty. The situation of such patches near the periphery of the fundus, and the presence around them of much pigmentation, are generally regarded as characteristics which are in favour of a syphilitic origin. Not uncommonly large solitary patches are met with in the vicinity of the optic disc or yellow spot, in which the diagnosis of tubercle seems probable, but in which no confirmatory evidence is obtained."

"A conglomerate mass of tubercle of the choroid may give rise to symptoms closely simulating those of an intra-ocular malignant growth: either a glioma of the retina, or a sarcoma of the choroid. Indeed, in some cases, from the clinical appearances alone, it is impossible to differentiate between the two affections." In the writer's experience a large tuberculous mass in the choroid giving rise to all the symptoms of intra-ocular tumour was secondary to an advanced condition of tuberculosis in other parts of the body.[4]

Treatment.—This may be divided into remedial and operative. The former is largely a question of the efficacy or otherwise of tuberculin. The original tuberculin of 1890 has long been discredited, but the **Tuberculin R.** has been employed by ophthalmic surgeons both on the Continent and in England with what are claimed to be remarkably good results. Details of nine cases of tubercle of the iris treated by Von Hippel with tuberculin, all but one with a good result, are given by Darier.[5] Five cases have recently been published by Hancock and Mayou,[6] out of which four were benefited. These authors lay great stress on administering the remedy under the control of the opsonic index :—

"The first injection should be small, and not more than $\frac{1}{1000}$ mgram should be given, owing to the negative phase, which usually lasts about two weeks. During the first week the ocular condition tends to become worse, and in this case it is most important that the opsonic index should be carefully watched, as the local reaction is often absent during the first one or two injections. After the index has begun to rise, the injections may be safely repeated, and the dose increased by watching the local condition, as judged by the amount of reaction produced and the length of time the improvement is maintained. Thus increasing the dose produces more reaction. The reaction corresponds to the negative phase, and shows itself at the end of forty-eight hours by increased ciliary injection, haze of cornea, and increase in the punctate keratitis. It usually lasts from two to three days, after which time the improvement commences and usually continues up to about the tenth day, when the index is at its highest. It is therefore advisable to repeat the injection about the eighth day, since the negative phase is not nearly so marked if tuberculin is given while the index is on the rise."

In addition to this method, two substances are claimed to be of use in directly attacking tubercle bacilli : (1) **Iodoform**, which with an equal part of lanolin may be used for corneal massage (Abadie), or it may be introduced into the anterior chamber in the form either of powder, or of flat discs made with gelatin (Haab's method) ;[7] (2) **Guaiacol**, which Darier has injected subconjunctivally with what he claims to be good results.

Operative Treatment.—In cases which have gone so far as to destroy the vision, there need be no hesitation in **Excising** what is certainly a source of danger to the patient. The only other operation likely to be considered is iridectomy in cases of localized tubercle of the iris. Unfortunately this is only very rarely successful, as the ciliary body is so frequently involved at an early stage of the disease.

Phlyctenular Disease and Tubercle.—During a period of twelve months, Nias and Paton,[8] acting on a suggestion of Sir A. E. Wright, have tested the opsonic power of the blood against the tubercle bacillus in over fifty cases of phlyctenular conjunctivitis and keratitis.

"The blood of a patient suffering from genuine phlyctenular ophthalmia is generally found at the outset of the case to be markedly deficient in opsonic power to the tubercle bacillus, but not to other bacteria, such as the staphylococcus ; but if the patient be adequately treated (without recourse to tuberculin, be it understood) the opsonic index rapidly rises, and reaches a maximum coincidently with the healing of the ulcers. It then begins to fall rapidly, and in a few days is far below the normal, as if from exhaustion of the mechanism. At this low figure it will remain if the observations be continued for an indefinite time; and if, as so often occurs, a relapse takes place, the same sequence of phenomena will be reproduced. In a minority of cases, generally older and more vigorous subjects, the opsonic index as regards tubercle will be found to have risen already much above the normal. Here it will remain, with temporary falls, till healing occurs, and then take a terminal drop as in the former category. We have not yet met with a single exception to this course of phenomena in phlyctenular conjunctivitis."

It appears from this that a connection between phlyctenular disease and tubercle, which clinically always seems probable, may be destined in the near future to receive a scientific proof. At present, exactly what that relation is remains doubtful.

REFERENCES.—[1]*Presse Méd.* June 19, 1907; [2]*Brit. Med. Jour.* Oct. 19, 1907; [3]*Ophthalm.* Jan. Feb. Mar. 1907; [4]*Trans. Ophthalm. Soc.* vol. xxvi. p. 98; [5]*Leçons de Thérapeutique Oculaire*, 3rd ed. p. 371; [6]*Ophthalm.* July, 1907; [7]Collins, *Ophthalm.* Mar. 1907; [8]*Lancet*, Dec. 1, 1906.

EYE-MUSCLES, AFFECTIONS OF.

A. Hugh Thompson, M.D.

Unilateral Internal Ophthalmoplegia.—Every now and then one comes across a patient whose complaint is that one pupil remains larger than the other, and that the sight of that eye is defective for near objects. As a rule the condition is due to the accidental introduction of atropine into the eye in question. Occasionally it may have been introduced purposely by a malingerer. Sometimes, however, the condition is not due to a mydriatic, and persists. Notes on five such cases are given in a paper by Bramwell and Sinclair,[1] from which, and from a review of the literature of the subject, they conclude that—excluding rare cases that have followed a local trauma, and also cases of third nerve paralysis in which the external muscles have recovered, leaving the internal ones still affected—unilateral internal ophthalmoplegia has in the great majority of cases very much the same significance as the Argyll-Robertson pupil, indicating not only previous syphilitic infection, but that the nervous system has been subsequently involved. The seat of the lesion may be either the ciliary ganglion (the view of Jonathan Hutchinson, who first described the condition[2]); or it may be in the anterior part of the third nerve nucleus in the mid-brain. The importance of recognizing the condition lies in the gravity of the prognosis of those cases which are due to previous syphilis, owing to the probability of further degenerative changes in the nervous system taking place. The mydriasis and cycloplegia are less complete in these cases as a rule than after the introduction of atropine into an eye, and any marked disproportion between the amount of pupillary dilatation and the loss of accommodation is in favour of a more permanent cause than atropine.

Recurrent Paralysis of the Third Nerve.—In 1896 details of twenty-nine cases of this condition were published by Holmes Spicer and

Ormerod.[3] The cases had previously been known as "ophthalmic migraine," as the attacks are always associated with severe headaches, but the term is misleading, as the headaches have very little in common with true migraine, and in a certain number of cases in which a post-mortem has been made, an organic lesion has been discovered at the base of the brain. Since 1896 several cases have been published,[4] the latest contribution being by Fisher[5] who reports five cases, not all of them recurrent so far as observed, but believed to belong to the same group on account of the transient nature of the ophthalmoplegia (disappearing after some weeks or months) and the severity of the headaches. The pain was occipital in two cases, occipital followed by retro-ocular in one, primarily retro-ocular in one, and in one it involved the temporal, malar, and frontal regions of one side. As an instance of the condition that may underlie such symptoms, a case may be mentioned where the autopsy revealed plastic exudation in the basal subarachnoid spaces, with fibrous adhesions round the origin of the third nerve, extending forward to the chiasma. Nuclear lesions have never been found.

REFERENCES.—[1]*Scot. Med. and Surg. Jour.* Dec. 1906; [2]*Med. Times and Gaz.* 1878, p. 488; [3]*Trans. Ophth. Soc.* vol. xvi. p. 277; [4]*Ophth. Rev.* 1896, 1900, 1903, 1904, 1905; [5]*Ibid.* Feb. 1906.

FACIAL PARALYSIS.

(*Vol.* 1905, *p.* 269)—Treat the cause (syphilis, otitis media, wounds) wherever possible. In cases due to "chill" (the commonest group), apply a **Blister** over the front of the mastoid process, produce **Diaphoresis** and **Purgation**, and treat pain with **Antipyrine**. Then give a tonic (e.g. ℞ Ferri Sulph., gr. ij; Quin. Sulph., gr. ij; Acid. Sulph. Dil., ♏x; Syrupi, ʒj; Aquam, ad ℥j; thrice daily after food): and stimulate the paralyzed muscles with the **Continuous Current**, applied several times daily for 10–15 minutes each time. **Massage** is also needed. For quite incurable cases **Facio-hypoglossal Anastomosis** is recommended.

FALLOPIAN TUBE, DISEASES OF.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Wilson, in the Ingleby Lectures,[1] has minutely investigated a large series of cases of salpingitis and their related inflammatory states of the pelvis. He classifies them into the following varieties:—

1. *Puerperal Infection.*—These, which are the most serious class of cases, onset commonly in the first week. The condition is grave because the inflamed tubes are only part of the mischief. The infected uterus should first receive attention. He prefers the use of the finger to the curette. Where a definite swelling is manifest in the pelvis it is due to accumulated serum or pus. It should be evacuated and drained through an incision in the posterior vaginal fornix. His experience of removal of the appendages in these cases has not been favourable to the operation, and he considers that it is better to rely on drainage alone. Late puerperal infection of the pelvis more commonly affects the cellular tissue, and is more amenable to surgical intervention. If pus has formed it should be let out by a lateral incision through the vaginal vault, or by an opening above and parallel to Poupart's ligament.

2. *Gonococcal Salpingitis.*—Late puerperal salpingitis is not uncommonly gonococcal, and frequently results from a chronic vaginitis or cervicitis which has existed throughout pregnancy. The conditions of the puerperium are favourable to its upward spread. The endometrium is first affected, the lochial discharge becoming more and more purulent, and frequently excessive and prolonged. There is but little constitutional disturbance during this period: at the most a sense of uneasiness and weight in the pelvis, tenderness of the uterus to touch, and not infrequently some bladder manifestations. Finally, some week or more later, extension to the tubes takes place, with acute symptoms of pelvic peritonitis. These cases should be treated expectantly, in the hope that they may subside without the formation of pus. When this hope disappears surgical measures are indicated.

3. *Subacute Salpingitis.*—Complete recovery from acute salpingitis frequently fails, and the inflamed tubes pass into a state of subacute inflammation. The symptoms are those of chronic pelvic peritonitis and cellulitis, with acute or subacute exacerbations. The condition is a true relapsing salpingitis, entirely comparable with the corresponding affection of the vermiform appendix.

Treatment should still be expectant so long as there is hope of the condition spontaneously clearing up. Absorption is aided by **Ichthyol** and glycerin locally applied, and by small doses of **Mercury** and **Potassium Iodide.** Wilson has had good results from the use of the **Electric Bath.** Where the symptoms persist in spite of treatment, operative measures are properly to be employed; similarly, also, those cases in which the relapses are violent and at short intervals. It is better, however, to wait if possible, since the pus in encysted pyosalpinges is known to become sterile after a time.

4. *Chronic Salpingitis.*—These are usually the late result of acute salpingitis, but occasionally, as in tuberculous infection of the tubes, the disease may be chronic from the first.

It is of importance in all pelvic inflammations, when determining our line of treatment, to find out whether pus is present or not. Wilson thinks highly of the leucocyte count in this connection, but it must be used in conjunction with the clinical signs and symptoms. There is a marked rise in staphylococcal and streptococcal infection, a moderate one in gonococcal inflammation, whilst in tuberculous salpingitis it is often below normal. The symptoms of non-suppurative adhesive salpingitis vary greatly. In some women they are largely mixed with neurotic manifestations. In others sterility is the trouble complained of. In others, again, definite pain, menstrual or otherwise, is present, together with menorrhagia and leucorrhœa. The degree of disability and the realness of the symptoms must be carefully estimated before deciding to operate. It is best to lean towards expectant treatment, especially where the symptoms and the frequency of exacerbations are becoming less.

Discussing the best operation for these conditions, Wilson thinks that both the abdominal and vaginal routes have advantages which may be separately made use of according to the individual case. Where the uterus is presumably healthy, and extensive matting is not present, colpotomy, either anterior or posterior, gives good results. Where, however, the case is obscure, the uterus infected, or dense adhesions can reasonably be suspected beforehand, the abdominal route should be chosen. He speaks well of the radical abdominal operation for cases of severe salpingitis, and prefers to remove the entire uterus with the tubes to performing a supravaginal hysterectomy. The ablation of the entire organ gives better drainage, and eliminates the risk of septic necrosis of the cervical stump.

We might add that by removing the cervix the possibility of a distressing purulent discharge, continuing after the operation, is done away with.

Tubal Pregnancy.—Taylor,[2] writing on the treatment of advanced cases of extra-uterine pregnancy, refers to Bland-Sutton's statement that the children in these cases are very frequently defective. This is more frequently the case with tubo-abdominal pregnancies. When the gestation sac is intraligamentous, development is more perfect. Advanced ligamentary pregnancy is often wrongly diagnosed, and the favourable time for operating is lost. Taylor believes that in these cases simple removal of the child, leaving the placenta in situ, is a successful procedure. The sac, when anterior, i.e., between the peritoneal cavity and the muscles of the abdominal wall, is best incised in the inguinal region. When, however, the sac is retroperitoneal, incision through the vagina is indicated. It is in these retroperitoneal or posterior sacs that infection from the rectum is almost certain to occur after the death of the fœtus. Fistulous communications between the sac and the fœtus form as a result, and the case becomes very serious. The placenta should be undisturbed if "quick," but should be removed if the child is dead and the placental circulation silted up. When the case is at term he advises that the child should be extracted from the retroperitoneal sac through a second incision in the abdominal wall. The sac is then drained via the vaginal opening, the aperture in the front of the sac having been sutured up. Attempts to drag a full-term child through an opening in the posterior vaginal fornix may tear the rectum into the sac or do other damage.

In tubo-abdominal gestation Taylor also advises operation at "term," although the risks are greater. This is due to the risk of septic peritonitis if the placenta is left, and the greater difficulty (in some cases) of controlling the hæmorrhage if the placenta is removed. The principal blood supply is from the ovarian and uterine vessels of the same side, since the placenta is always partially attached to the remains of the tube in which the ovum first grafted. If this fact is borne in mind the vessels may be suitably controlled before removal. Where detachment of the placenta cannot be safely effected, a successful result may still be attained by leaving it in situ, and sewing up the sac without drainage. Absolute asepsis is a necessity, of course.

Hamilton Bell,[3] shortly before his death, contributed an exhaustive analysis of eighty-eight cases of tubal gestation. His results may be thus summarized: (1) A history of amenorrhœa was obtained in 50 per cent of the cases; (2) Acute pain with faintness occurred in forty cases. Acute pain, with or without sickness, but without faintness, occurred in thirty-two; (3) Indefinite and less severe pain occurred in the remainder; (4) Hæmorrhagic vaginal discharge occurred in seventy-three cases; (5) A decidual cast was passed in seventeen; (6) Fever was present in twenty-three; (7) There is an increasing liability to tubal gestation as age advances; (8) Comparing his cases, in which early operation was practised, with those recorded by Champneys, in which "expectant" treatment was followed, he found that the former were attended by a death-rate of 3·4 per cent, as against 9·3 per cent in the latter. Two of the fatalities recorded by Bell were directly due to delay. This admirable paper proves conclusively the value of early operative interference in cases of tubal gestation. Reading it, one deplores more than ever the death of its author.

References.—[1]*Lancet*, June 5 and July 6, 1907, now published in book form, by John Wright & Co.; [2]*Jour. Obst. and Gyn. Brit. Emp.* Dec. 1906; [3]*Ibid.*

FAVUS.

E. Graham Little, M.D., F.R.C.P.

Constantin and Boyreau[1] report a curious case of favus of the smooth skin, which produced a scaly eruption so closely resembling psoriasis that several observers were misled as to the diagnosis, until the *Achorion Schönleinii* was demonstrated in the scales. The patient was suffering from phthisis, of which she died. Favus was found on the scalp, the forehead, the cheeks, the breast and abdomen, and anterior part of the thighs. The lesions were finely scaly, or formed of white "concentric, tile-like, striated lamellæ."

Favus of the smooth skin, unlike favus of hairy parts, is readily cured by local applications such as **Tincture of Iodine** or any similar parasiticide.

Reference.—[1]*Monats. f. prakt. Derm.*, Nov. 15, 1906, quoted by *Brit. Jour. Derm.* 1906, p. 64.

FEET, COMMON AFFECTIONS OF.

E. Graham Little, M.D., F.R.C.P.

Tender Feet.—Morris[1] recommends the following treatment for this condition. The feet should be dusted with powders, of which the following formulæ are given:—(1) Finely divided boracic acid powder, especially useful for persons who sweat a great deal in the feet; (2) Salicylic acid, 1 dr.; boracic acid, finely powdered, 1 oz.: French chalk, carefully prepared, to 4 oz.; (3) Salicylic acid, 1 dr.; oleate of zinc, 1 oz.; talc, or French chalk, to 4 oz.

The best method of hardening the feet preparatory to any unusual effort is to bathe them night and morning in tepid water with superfatted **Ichthyol Soap**; dry carefully, and apply a lotion consisting of equal parts of **Spirits of Wine** and **Hamamelis**; again dry carefully, and then dust with one or other of the powders above mentioned.

Cold Feet and Chilblains.—In many cases the diet is found to be at fault; an absence of sugar has been found to play an important part in causation of these conditions, especially in children. Exposure to **Radiant Heat** or to the **High-frequency Current** has been tried with great success in some cases. **Calcium Salts,** recommended by Wright, are of service in many cases; a child of ten to twelve may be given 10 gr. of calcium chloride three times a day for five or six days. **Ichthyol,** 2½ gr. three times a day, is very useful: it should be given in the form of pills or capsules, and the dose may be increased until symptoms of "repeating" occur. Cod-liver oil is not, in Morris's experience, particularly valuable in such cases; **Cream and Maltine,** or concentrated foods, are better, and **Hypophosphites** are extremely useful. For local treatment of chilblains in the erythematous stage, the methods detailed above for tender feet should be used: when vesication has taken place, **Linimentum Saponis** should be painted on, or if there is much irritation, **Linimentum Belladonnæ** may be added; failing this, a solution of **Ichthyol** (equal parts of ichthyol and rose-water) may be used in the same way. If the chilblains are ulcerated, tincture of **Benzoin** may be used, or the following ointment:—

℞ Zinc Oxide	ʒvij	Olive Oil	ʒj
Lanolin	ʒj	Lime Water	℥j

The olive oil and lanolin are mixed with heat, the lime water added to make an emulsion, and then the powdered zinc oxide slowly added. It should be applied on lint or linen, kept in position by a bandage. To this preparation as a basis may be added ichthyol ½ dr. to 3 oz., or camphor ½ dr. to 3 oz., or Friar's balsam 1 dr. to 3oz., or oleum rusci 1 dr. to 3 oz.

Corns.—The best treatment is the application of **Salicylic Collodion,** ½ dr. salicylic acid to ½ oz. collodion, with the addition of a little cannabis indica. A 10 per cent pyrogallic ointment will also remove corns quickly. The socks should be carefully fitted, to prevent recurrence.

REFERENCE.—[1]*The Hospital*, Oct. 27, 1906.

FEMUR, FRACTURE OF. (*See* FRACTURES.)

FEVER IN THE NEW-BORN INFANT. (*See* NEW-BORN, DISEASES OF.)

FOOT, FRACTURES OF. (*See* FRACTURES.)

FOOT, RESECTION OF.

Priestley Leech, M.D., F.R.C.S.

In certain cases the Mikulicz-Wladimiroff resection of the foot gives very good results. and it is doubtful whether it has been resorted to as often as it might have been. A. Young[1] reports a case, with remarks on the operative technique. The three conditions which were laid down by Mikulicz-Radecki were: (1) Caries of the foot where the disease is confined to the astragalus, the os calcis, and the ankle joint: (2) Extensive loss of skin substance in the region of the heel: (3) Injuries, especially gunshot, with destruction of the heel. It is doubtful whether it is justified under the second conditions, as the operative technique of skin-grafting has so much improved. Since then the method has been employed with more or less success for other conditions, viz., in at least three cases for malignant growth in the region of the heel; it has also been used to lengthen a limb unduly shortened by injury or disease; in cases of suppuration in the ankle-joint and tarsal articulations it has proved very useful. In a case of chronic osteomyelitis following injury, where there was considerable fistulous development and ankylosis of the ankle, Fenger performed this operation with success, and Professor Bruns has employed it in two cases of paralytic talipes.

Kohlhaas[2] has collected seventy-three cases of this operation, fifty-three of which were done for tuberculous disease of the ankle and of the posterior tarsal bones. Young's case was a boy aged fourteen, suffering from advanced tuberculous disease of the right tarsal bones, so extensive that when the bone had been removed and the fore part of the foot was placed in line with the leg, there intervened between the metatarsals and the cut ends of the tibia and fibula only a small section of the internal cuneiform, little more than the distal cartilaginous surfaces of the other two cuneiforms, and the merest shaving of the cuboid. The result was very good when the boy was last seen three years later. Bony union did not occur until several weeks after the operation, but its occurrence was demonstrated by radiography. Catgut sutures are not sufficient for union, and it is better to employ silver wire and bone pegs. Care should be taken that dorsal flexion of the toes be obtained; and section of the plantar flexor tendons, as advised by some authors, is better omitted. Young thinks that the preservation of the intrinsic muscles of the flexor aspect of the foot has some functional value in the stump in preserving spring in the foot. In his case he did not use the Mikulicz boot, but one which fitted the leg closely and firmly as far as the knee, and he thinks that such a boot is of use in preventing a gradual bending at the level of the bony union.

Bobbio,[3] of Prof. Bajardi's clinic, reports two cases of this amputation, one in a woman of twenty-four, suffering from tibiotarsal caries with fistulæ, and the other in a boy of fifteen, for the same disease; bony union did not take place in the latter case (operated on in June, 1906), but may do so, and in any case the patient with a firm fibrous union and free from his former disease, with a suitable orthopædic apparatus can use his foot and walk well. Bobbio also reports a case in a man, age 66, with caries and ulceration following an injury twenty-five years before, and ankylosed ankle. No osseous consolidation took place, and the patient complaining of a great deal of pain, amputation was performed a little more than a month later. The operation is perhaps not a very suitable one in old people, and the case of D'Antoria, published by Marcozzi,[4] of successful bony union in a woman sixty years old, where the resection was done for osteosarcoma of the heel, must be looked upon as exceptional.

REFERENCES.—[1]*Pract.* Feb. 1907; [2]*Beitr. z. klin. Chir.* Bd. viii. p. 8, 1801; [3]*Il Policl.* Mar. 3, 1907; [4]*Giorn. Internaz. delle Sci. Med.* 1906, Fasc. i.

FRACTURES. (*See also* PASSIVE HYPERÆMIA. *p.* 71.)

Priestley Leech, M.D., F.R.C.S.

Fractures in the Vicinity of Joints.—Arbuthnot Lane,[1] in fractures of the tibia and fibula about the ankle-joint, if by any process of manipulation and fixation in splints he is unable to retain the fragments in apposition, fixes them by means of a screw, except in alcoholic subjects or fat women, as the compact tissue of the lower end of the fibula and tibia is very friable, and nothing will hold. In separation of the epiphysis of the femur he has found it necessary to expose the seat of the fracture in order to replace the fragments in position : as a rule there is little tendency to displacement, and if there is, a couple of staples are the most effective means of securing the surfaces in apposition. In vertical fractures into the joint, screws or wire are efficient. In fractures about the hip-joint, as in the shaft of the femur, long steel plates with several screws perforating both layers of compact tissue and placed at suitable angles have served best.

In extension and abduction fractures of the wrist, commonly called Colles's fractures, if the fragments cannot be replaced by manipulation he makes a vertical incision over the posterior and outer aspect of the seat of fracture, introduces a steel elevator beneath the lower fragment which may be formed by the epiphysis, and levers it into position. This can only be done when the lower fragment is not comminuted.

Fractures of the olecranon are most effectually dealt with by means of a long screw. Occasionally the screw may require removal after a long interval, because of the gradual exposure of its head. Fractures of the coronoid are sometimes very difficult to deal with. On the whole Lane believes excision of the fragment is the best treatment : much depends, however, on the nature of the fracture and the displacement of the fragment. It is difficult to know always what to do with fractures of the head of the radius. Sometimes he has replaced the fragment, but owing to its small size and friability it is difficult to fix it firmly enough to permit of rotatory movements being commenced at once, and while waiting for union, adhesions were liable to form and limit the movement. In some cases he has removed the fragment and the stump of the head as well, and in both satisfactory results have been obtained. If by manipulation the fragment can be restored to or nearly to its normal position, passive movements undertaken at once form the best treatment. The fracture about the elbow-joint that more frequently calls for operative treatment is that commonly called separation of the lower epiphysis of the humerus. In some cases where it has been impossible to replace the epiphysis he has made a vertical incision posteriorly over the joint and replaced the fragments by leverage ; there is no tendency to displacement if the elbow is kept fixed, and he has ceased to use any retaining media.

In fractures of the upper end of the humerus in which he has been unable by manipulation to restore the bone to its original form, and where it was important the functions of the joint should not be lost.

he has exposed the fracture and replaced the fragments in position ; staples are useful when it is necessary to perforate the trochanters because of their cancellous stricture, but if the fragments are dense, screws or screws and plates are very useful.

As regards material for retaining fragments in position, screws in two gauges are necessary. Up to a length of three-quarters of an inch gauge 5 is as good as any, and as three-quarters of an inch is a very useful size, he uses it also in gauge 7. Having only two gauges three diamond drills only are required, one for the thread of the screw of gauge 5, one for the barrel of gauge 5 and for the thread of gauge 7, and one for the barrel of gauge 7. Stout metal plates, made of steel or German silver, and of various lengths, are also useful. In fractures of small bones like the radius, ulna, and clavicle, the holes are drilled to the size of gauge 5, which allows of a screw that will perforate both compact layers, a matter of vital importance, since a screw obviously cannot get a secure hold on a single compact layer. Virgin silver is the best wire. Staples with prominent or rounded angles are often very efficient, as in cases of the upper end of the humerus and lower end of the femur. Lane knows of no condition in which pegs can be of any use mechanically.

There was also a discussion on this subject at the London Harveian Society, which was opened by Mr. Watson Cheyne.[2] The surgical tendency in favour of operative interference in fractures near joints is becoming more pronounced, as is the use of skiagraphs in the diagnosis of the exact lesion and as an aid to the exact replacement of the fractured ends. There is nothing to be said against either operative interference or the use of the X rays, but it must not be forgotten that it is not within the limits of practical politics for every practitioner to operate on fractures or to obtain stereographic skiagraphs of fractures to work by. Those practitioners who are not in the habit of frequently operating aseptically would be well advised to treat these fractures in some other way, for, as Czerny said long ago, joints are more easily infected than the peritoneum. Watson Cheyne says the vital point in the treatment of fractures in the neighbourhood of joints is to get the bones accurately into their normal position and retain them there. In doing this it is essential that as little additional bruising or tearing of the parts as possible should be done, for the greater the effusion of lymph and blood beneath the peritoneum and between the fractured ends, the greater the amount of callus ; it is therefore better in most cases to administer an anæsthetic, and even then the fractured ends should be manipulated as gently as possible. It is useful to reduce the fragments under an X-ray screen, or if this is impossible, to take a skiagraph after reduction ; and Cheyne lays great stress on this being a stereoscopic one. If the skiagram shows that the displacement has not been remedied, do not waste time, but take the fracture down and make another attempt to replace it ; relying on pads and the weight of the arm in fracture of the head of the humerus is, in Cheyne's opinion, quite futile. Should the second attempt fail, unless there is some marked contra-indication open operation should be resorted to. The advantages of this are: (1) In most cases one is enabled to rectify the state of matters with precision; (2) If the fragments have been suitably fixed it enables one to begin early movements of the joint and muscles around with much greater freedom than could otherwise be done, and without the risk of producing displacement; (3) and this is often a point of very great importance—It enables one to evacuate the effusion and to clear away the coagulated blood and lymph, which is otherwise apt to lead to the formation of an excessive amount of callus or of strong adhesions inside the capsule of the joint. While Watson Cheyne thinks that many of these fractures—more especially those in connection with the elbow-joint—are not operated on in the early stages so often as is desirable, he says an error in asepsis which in the case of the peritoneum might be of little or no consequence, might very probably lead to disastrous results in the case of a joint.

If operation is decided upon, he advocates its being immediate rather than waiting for a few days. The disadvantages of waiting are that the parts become stuck together with lymph and organized blood-clot, and the recovery of movement may thus be delayed. The incision should be free enough for the surgeon to see exactly what he is doing, and for means of fixation he employs screws or pegs, or if possible metal plates, silver wire not producing a sufficiently firm result. After the operation it is always well to put in a drainage tube for three or four days to prevent blood-clot accumulating. Active and passive movements may be begun after eight or ten days.

If no operation is performed, massage should be begun at once with the view of getting rid of the effused blood and lymph as quickly as possible.

In the discussion Edward Owen laid stress on the cases where the surgeon cannot make up his mind whether there is a fracture or not. Under these circumstances he says it is wiser and better in every way for the surgeon to insist on an examination under chloroform and with the help of the X rays. In cases of fractures near a joint, especially in a child, if treatment has not given a good result they must not be hasty in suggesting operative treatment, as time may see a return of good movement, especially in the elbow, where the joint has been well flexed from the beginning, as advocated by Robert Jones.

Pearce Gould emphasized three points: (1) The necessity for making an exact diagnosis of the fracture at the very beginning, and its immediate reduction; (2) The futility of pads and splints in the reduction of any deformity; and (3) The necessity, if operation is deemed necessary, of it being done early.

Robert Jones, of Liverpool, referred especially to the treatment of fractures near the elbow by acute flexion. The thumb should be placed well into the flexure of the elbow, with the arm supinated, and with a good deal of pressure on the flexure it should be placed in a condition of acute flexion, with the fingers resting on the shoulder. This prevents the formation of callus in front of the elbow and subsequent inability to flex the elbow. He drew attention also to the chipping off a piece of the head of the radius in falls on the hand, and point out that in the falls from a height either a Pott's fracture occurs or a triangular piece of bone is knocked off the front of the tibia. There is no crepitus, but only a fullness in front of the joint, and unless it is reduced at once, and unless the foot is kept for a period in a position of acute flexion. there will be trouble with it later, because no amount of massage or movement will be of any use. In Pott's fracture they must not wait for the swelling to go down, but reduce the astragalus, see that the foot is well everted, and when the patient begins to walk see that by suitable mechanism the body weight is put on the outer side of the tarsus. Fracture of the astragalus, Jones says, is not so rare as is thought, and where it is recognized by manipulation and skiagram that one part is displaced in front of the ankle and one behind, it is wise not to waste time, but cut down and remove the piece.

Keen[3] reports two cases of interest in this connection. One was a fracture of the greater tuberosity of the humerus, with dislocation of the humerus into the axilla. The humerus was reduced, and seven days later the tuberosity was fixed to the humerus by two nails. Before the use of the X rays these cases were put down to contusion or bruising. The second case was one of fracture of the anatomical neck of the humerus and dislocation of the head into the axilla. On operating thirty-nine days after the accident, Keen had the greatest difficulty in removing the head of the humerus. A perusal of this latter case emphasizes the importance of not delaying operation.

Fractures of the Shaft of the Femur.—Sir Thomas Myles[4] thinks that as regards fractures surgery has of late been very unprogressive, especially in those of the femur. It is not a very common fracture, except among working men and sportsmen. Myles's own experience of the results of the routine treatment is not encouraging. In nearly all cases occurring in adults there has been considerable shortening and consequent lameness, some stiffness in the knee-joint, some limitation of the movement of rotation at the hip-joint, a varying degree of muscular atrophy, pain with changes in the weather, and almost always an ugly nob of callus to be felt or seen at the seat or the united fracture. The working man is not as efficient, and the sporting man cannot ride or jump as well, and they suffer for years from coldness and œdema of the foot on the injured side. Myles at first blamed himself for these results, but finally came to the conclusion that it was the fault of the method of treatment. A study of the museum specimens and of X-ray photographs show certain constant factors in these cases: (1) There is always shortening, due to overlapping of the fragments; (2) The lower fragment may be in front, behind, or outside the upper fragment—never where it ought to be; (3) The lower fragment is rotated inwards or outwards; it is never in perfect alignment with the upper. It may be in approximate alignment, but it can never be perfect; (4) It is absolutely impossible to decide by the unaided eye, touch, or measurements what the actual displacement of the fragment is. The mass of muscle surrounding the bone, the extravasated blood, the developing skin and fascia, all combine to soften the asperities of the outline. He thinks that the diminution of muscular activity is in part due to imperfect alignment as well as shortening.

To avoid the evil results of the usual treatment, he suggests that operations should only be undertaken by men engaged in daily operative work at the hospitals ; they should not, save in very rare cases, be carried out in private houses ; they should never be performed save in healthy youths or adults. A very perfect technique must be at the operator's disposal, and plenty of skilled assistants.

He has abandoned the use of wire sutures in clean-cut transverse fractures of the shaft of the femur ; in oblique fractures the wire may be used most effectively. One hole is usually sufficient, but the bone must be drilled obliquely, the lower fragment being drilled at a higher level than the upper one. He is much in favour of the clamp devised by Park Hill, of Denver, but it cannot be used in children. He has had good results from screws. He recommends practising these operations on the cadaver before doing them on the living.

Tully Vaughan,[5] in a paper on the operative treatment of fractures, makes the following incisions for exposure of fractured femur.

In the Upper Third.—An incision four to eight or ten inches long, from half an inch below the anterior superior spinous process of the ilium downwards in line with the outer border of the patella, cutting into the angle formed by the divergence from each other of the sartorius and the tensor vaginæ femoris, to the outer side of the rectus between it and the gluteus medius and minimus. If the fracture is below the trochanters, the vastus externus must be drawn outward and the fibres of the crureus divided and retracted to expose the bone. From three to six branches of the external circumflex artery may require ligation. To examine the neck of the femur within the capsule it is necessary to separate the psoas and iliacus from the capsule and draw them inward with the rectus, and then split the capsule in line with the long axis of the neck.

Middle Third.—An incision along the middle third in the line which separates the anterior from the external surface of the thigh ; find the outer border of the rectus muscle, draw it inwards and the vastus externus outwards, and divide the fibres of the crureus, which are closely attached to the bone, until it is exposed to a sufficient extent.

Lower Third.—An incision from the anterior portion of the outer condyle of the femur upwards along the outer side of the thigh, exposing and splitting the vastus externus until the bone is exposed. Several arteries from the anastomosis around the knee will require ligation. Care must be taken not to injure the popliteal vessels and nerves, or inadvertently open the synovial cavity of the knee.

Arbuthnot Lane[6] says that while recent fractures of the femur can be dealt with effectively and without risk by operation, the surgical treatment of malunited fractures of this bone is often difficult in the extreme, and occasionally causes some anxiety by the profuse hæmorrhage which takes place. The soft parts will stretch if sufficient force is exerted, and oblique section of the fractured ends is often the best, because many of the fractures are oblique or spiral, and it is easier to maintain the ends in apposition by oblique section. Ii is also generally the most economical from the point of view of shortening. Much care is requisite to determine accurately the plane in which each fragment must be divided if an accurate junction is to be obtained. In operating on separation of the upper epiphysis of the femur which is united in a bad position, he exposes the front of the capsule of the joint. If the stump of the neck is excessively prominent, as it usually is, enough is taken away to allow of a more or less complete range of flexion. The outward rotation of the shaft is overcome by lacing up the anterior ligament transversely to the length of its fibres by silver wire, so approximating its points of attachment till the range of rotation of the limb equals that of its fellow. Flexion of the hip-joint is limited by the impact of the front of the neck of the femur against the acetabular margin, and the range of flexion varies directly with any associated abduction and indirectly with any adduction.

Fractures of the Foot.—Cabot and Binney[7] have a very interesting paper on the fractures of the os calcis and astragalus, based on the study of a hundred and eleven cases admitted to the Massachusetts Hospital during the last fifteen years. None of the fractures occurred in children, very few in women, and the vast majority in men in the prime of life. Of sixty-three cases of fracture of the os calcis, fifty-nine were due to falls from a height, and four only were produced by direct violence. The position of the astragalus renders it less likely to be broken by crushing strains, but this nevertheless frequently occurs; in the author's series the method of production was known in thirty-five cases; of these twenty-one were due to falls from a height and fourteen to direct violence. In examining X-ray plates of fracture of the astragalus it is well to bear in mind that the os trigonum, which is sometimes attached to the astragalus as a process on its posterior aspect, may be entirely detached and joined only by a cartilaginous union, sometimes partially fused, may be displaced upwards as a result of injury to the foot, and may be mistaken for a fracture; and the surgeon must not be misled by the appearance of an apparently isolated fracture just behind the posterior border of the astragalus.

Diagnosis.—Mistakes are often made. In the author's sixty-six cases of fracture of the os calcis, a large majority of which came directly to the hospital and were under the care of a skilled staff with the most modern methods at their command, seven were wrongly diagnosed, and as a result wrongly treated: three were regarded as sprained ankles, one as a Pott's fracture, one as a dislocation, two apparently as simple bruises of the foot. The X rays should be used in every case.

The Duration of Disability was known in twenty cases of fracture of the os calcis, and varied from six months to two years.

The duration of disability was known in nine of the astragalus cases; and varied from six months to over two years. The average was about a year and a half. The cases of compound fracture show a long period of disability; infection is common, and complicated as it is by the proximity of many joints, must be classified as a very serious injury. In not a few reported cases amputation has ultimately been necessary, and in most cases repeated operation only has resulted in cure.

TREATMENT OF FRESH CASES.—Elevate the foot, apply ice bags, and put on a "pillow" splint or posterior wire splint, so that the bandages can readily be removed; if the skin is threatened by a loose fragment, watch it carefully, and remove if it threatens to perforate. After the swelling has diminished—generally at the end of a week or ten days—an attempt may be made to improve the position if loose fragments are present. Except for the retention in position of loose fragments, and after operative interference, there is little necessity for immobilization in these cases, and the slavish adherence to this principle of the treatment of fractures is likely to increase rather than diminish the disability. In impacted cases early massage and passive motion are to be strongly advised, care being taken that no loose fragments are disturbed. The most common and serious error is to allow the patient to bear his weight on the foot too early; he should bear no weight on his foot for sixty days.

Fractures of the Neck of the Astragalus.—Where the anterior fragment of the astragalus is threatening to penetrate the skin, it must either be removed or replaced in position, and held there by wiring or suturing; the latter can only be done if the anterior fragment is fairly large.

Fractures of the Neck, with Rotation of the Posterior Fragment.—This class is like the former, except that as the skin is not threatened there is no indication for immediate treatment, and operation should not be undertaken until the swelling has subsided and the tissues are in a better condition. The results without operation are uniformly bad. The end to be sought is the restoration of the fragments to their previous position. The difficulty lies in the rather insufficient exposure by any incision at our command, and the difficulty of rotating the body or posterior fragment into a normal position and then holding it in contact with the anterior fragment. If this can be done in a satisfactory manner, it is to be preferred to the alternative of removing the anterior fragment, but the latter procedure has given excellent results; the choice between these two can probably not be made until the joint is opened.

Fractures of the Body of the Astragalus.—These are commonly impacted, and frequently complicated by impaction of the underlying portion of the os calcis; though the result will probably be bad, it does not appear likely that operation will improve the condition. Where loose fragments exist, it may be better to remove them.

Fractures of the Os Calcis.—Small loose heel fragments (the avulsion fracture) are best treated by operation ; if left to nature the convalescence is slow, and a troublesome prominence over the heel is practically certain to result. The fragment is readily exposed by a curved incision, and may be held in position by a nail, by suture, or by wiring.

In the case of large heel fragments, when treated expectantly the results are far from satisfactory. The upward displacement of the heel fragment generally results in troublesome "flat-foot." The authors have had a good result in one case by subcutaneous tenotomy of the tendo Achillis, as suggested by Carless, reduction of the fragment, and then putting the foot up in a plaster-of-Paris dressing. The reduction of the fragment might be aided by drilling two small holes in the side of the heel fragment and inserting powerful hooks, such as those used by Porter in elevating the head of the bone after fracture and dislocation of the head of the humerus.

In the case of fissures, comminution of the anterior half, and complete comminution, nothing but expectant treatment is justified. A pad under the arch will mitigate if not prevent the flattening of the arch, which is very liable to occur.

Treatment of Old Cases.—Many of these, the authors think, can be improved, and the tendency has been to over-conservatism.

In old fractures of the astragalus there are two prominent indications for operation : (1) Limitation of movement ; and (2) Cases of valgus or varus deformity.

1. Limitation of movement frequently follows fracture of the neck of the astragalus with faulty union ; motion is likely to be very much limited, and may be practically nil. Partial or complete astragalectomy may be done. In the partial operation only the head and neck of the bone are removed, and this is particularly applicable to cases of faulty union due to rotation of the posterior fragment ; the resulting improvement has been encouraging. Where the disability is great, and removal of the anterior fragment does not relieve the condition, complete astragalectomy should be considered ; the possibility of a worse result is not large, and very great improvement has followed in some of the cases in which this has been done.

2. In cases of valgus or varus deformity very great disability results from the position of the foot, and operation is indicated for the same reasons that it is to be advised in severe cases of rigid "flat-foot." The operation that is most applicable is the osteotomy of Trendelenburg, in which the tibia is divided with an osteotome from side to side just above its articular surface, the chisel being manipulated so as to leave a V-shaped gap. The fibula is then divided at a similar level, and the whole foot carried inwards until the weight-bearing line is normal. Care must be taken that the deformity is not over-corrected, as there is little or no tendency for the bones to return to their former position, and it is possible to convert a varus into a valgus foot by over-correction.

Old fractures of the os calcis do not present an attractive field for operative interference. Where, however, there is excessive callus formation below the external malleolus, resulting in a painful foot, considerable relief may be expected. In many of these cases, however, pain rather than limitation of movement is the cause of disability, and where this is the case operation is practically certain to result in improvement.

Ely,[8] in treating of old fracture of the tarsus, draws attention to the errors made in diagnosis in cases of fracture of the os calcis and astragalus ; judging from his cases, he says 76 per cent had been improperly diagnosed at the time of the injury. The skiagrams of these fractures are much more easily interpreted if an X-ray plate be taken of both ankles.

REFERENCES.—[1]*Lancet*, May 11, 1907 ; [2]*Clin. Jour.* May 22, 1907 ; [3]*Ann. Surg.* June, 1907 ; [4]*Med. Press*, July 10, 1907 ; [5]*Amer. Jour. Med. Sci.* Mar. 1907 ; [6]*Brit. Med. Jour.* May, 1907 ; [7]*Ann. Surg.* Jan. 1907 ; [8]*Ibid.*

FRECKLES.

(*Vol.* 1903, *p.* 331)—**Resorcin** Paste, applied day and night, produces scaling in six days. The patient must stay indoors. It causes discomfort, and sometimes depression. An ointment containing **Hydrogen Peroxide** or **Chrysarobin** (¼ per cent) may be used as depigmentary. (*Vol.* 1888, *p.* 353)—Liveing recommends, as a lotion, Tinct. Benzoini Co., ʒij ; Ammonii Chloridi, ʒj to ʒiij ; Aq. Flor. Aurant., ℥vij ; to which may be added Hydrarg. Perchlorid. gr. iij.

FROST-BITE.

(*Vol.* 1887, *p.* 188)—For cases of the first or second degree use Potass. Permang., gr. ij ; Aquam, ad ʒj ; applied in the form of compresses. (*Vol.* 1897, *p.* 249)—Another application is **Potassium Sozoiodolate**, 2 parts ; Vaselin, 1 part ; Lanolin, 7 parts.

GALL-BLADDER, AFFECTIONS OF.—(*See also* BILE-DUCTS *and* LIVER.)

Rutherford Morison, F.R.C.S.

Gall-stones.—The presence of calculi in the gall-bladder and liver-ducts is partially explained by the action of micro-organisms, and it is certain that most of the softer varieties at least are due to this cause. It is probable that others are due to the same causes which give rise to the formation of calculi elsewhere, and these will not be understood till an explanation of the origin of calculi in general is forthcoming.

It is certain that calculi may exist for long periods without producing serious symptoms. It is probable that inflammation has to be superadded before the typical attacks occur. Then the gall-bladder and ducts, stimulated by the presence of the foreign body and the inflammation of their lining membrane, attempt to expel the intruder. The symptoms are explained by these efforts. The signs—gall-bladder tumour or jaundice—are due to mechanical blocking of the ducts by a stone or stones. Gall-stones are a very serious possession. In addition to the painful illnesses and prolonged incapacity caused by them, a fatal result is much more frequent than the post-mortem records suggest. Their diagnosis is, therefore, a matter of great importance, for surgical removal is the only known means of cure. As in all diagnosis based on circumstantial evidence only—and this has to be done in the majority of instances—mistakes are certain to occur ; but the symptoms are usually so typical that it is rare to see futile operations.

It has been taught for too long that jaundice follows the attack, and that a stone, or stones, may be found in the fæces after it. In the majority of cases neither of these results need be anticipated, for they mean that the stone has been small enough to pass into, or through, the common duct, and this is comparatively rare. The probable course of events is, that the gall-bladder with stones in it attempts to extrude them, causing sudden very severe pain of a cramplike character, and that, after a futile effort, frequently of some hours' duration, the contractions cease, and the stones fall back into the gall-bladder again. If the stone becomes impacted in the neck of the gall-bladder, or in the cystic duct, a gall-bladder tumour will be discoverable after the attack. In any case, pressure over the gall-bladder discovers tenderness lasting some days. If the stone passes into the common duct, jaundice may be expected to follow the attack. It does not always do so, however, and it must be remembered, for we have abundant evidence of it, that a stone, or stones, may lie in the common duct for months without producing symptoms after the first violence of the paroxysm has ceased.

With regard to treatment, the only reasonable advice to offer to otherwise healthy people is to get the stones removed as early as possible by operation. What operation to select is still a disputed question. Guided by a most important surgical principle—that operations should as far as possible leave everything in a natural state—our view is that the best operation on the gall-bladder consists in opening it, removing the stones, and closing it completely again (cholecystotomy). This is a safe operation, and one attended by satisfactory results, both immediate and remote, when the ducts are patent and the gall-bladder is fairly healthy.

If the infection of the gall-bladder or ducts has advanced further, but drainage is likely to restore them to a normal condition after removing the stones, the gall-bladder is drained (cholecystostomy).

When the cystic duct is hopelessly blocked, or the gall-bladder has any suspicious localized thickening which may mean malignant growth, its removal is indicated (cholecystectomy).

Etiology.—John Funke[1] says the first essential is impediment to the outflow of the bile. This can occur from many causes. When the bile becomes stagnant, infection usually follows. The infection must not be too severe ; only a catarrhal inflammation must be set up. This stimulates the formation of a glue-like mucin and crystalline cholesterin. The salts contained in biliary concretions are largely a product of the diseased mucous membrane of the gall-bladder. Of 102 calculi examined, seventy-one were sterile, thirty-one gave rise to growths in bouillon. Notwithstanding the fact that infection and impediment to the outflow of bile are necessary factors in the causation of the condition, it is also true that infection of the gall-bladder occurs without cholelithiasis. He has seen at autopsy, occlusion of the cystic and common ducts and infection of the bile in the gall-bladder, but no stones. There is, perhaps, another factor still obscure, which plays an important part in the production of biliary concretions, and he believes that this factor must be worked out upon a combination of clinical and post-mortem data, and that experimental investigation cannot clear up the obscurity.

E. Stanmore Bishop[2] says gall-stones *per se* are not so important as the infection of the bile-ducts so commonly associated with them. The probabilities are in favour of the conveyance of the infective organisms by the portal vein. A recognition of the fact that gall-stones may be the cause of "bilious attacks" and "stomach troubles" may allow of early operation and prevention of the serious results occurring from delayed diagnosis. The symptoms to be relied on, in addition to those generally recognized, are pain, which radiates to the angle of the scapula behind, and tenderness elicited by the examiner, who, sitting behind the patient bent forward and upright, places both hands on the abdomen below the costal margins, and gradually presses them inwards and upwards till the right hand during forced inspiration comes in contact with the under-surface of the liver. A tender gall-bladder touched in this manner causes a sudden arrest of inspiration (Murphy's sign). The author attaches great importance to this sign.

DIAGNOSIS AND INDICATIONS FOR OPERATION.—In a clinical debate held under the auspices of the Chelsea Clinical Society,[3] Hale White said the subject of diagnosis and treatment of gall-stones was one of the most difficult in medicine. The only way in which they can be diagnosed with certainty is to find them in the fæces. It would appear probable from post-mortem records that about 20 per cent of persons with gall-stones will get cancer of the gall-bladder.

Pain in the pyloric region of the stomach, with signs of a dilated stomach, may be due to gall-stones which have caused malignant disease of the gall-bladder, setting up pyloric obstruction, to malignant disease of the pylorus or duodenum, or to non-malignant inflammatory results of gastric ulcer, duodenal ulcer, or gall-stones. If jaundice is deep and long-lasting, the case is almost certainly one of malignant disease. More rarely floating kidney, renal calculus, and aneurysm give rise to difficulty in diagnosis. Gall-stones very rarely kill directly. If there is chronic jaundice due to impaction of a gall-stone, the patient is best without operation, for he will very likely get well if left to himself.

In chronic pancreatitis due to gall-stone, "Don't drain the gall-bladder, or do any other operation, for the patient will almost certainly get well if left alone." He thought it probable that ultimately the correct teaching will be that operations in connection with gall-stones should fall into two main groups : those undertaken to remove stones between attacks of activity, to save the patient from the likelihood of subsequent growth and septic complications, and those undertaken for direct results of gall-stones, such as adhesions obstructing the duodenum, and intestinal obstruction produced by a stone.

Mayo Robson said that gall-stones produced death in a very great number of cases. He had operated with success on patients over 80 for serious conditions suddenly produced by gall-stones, which must have lain dormant for years. He did not think the diagnosis very difficult. A rigid right rectus, a tender spot an inch above and to the right of the umbilicus, a pain radiating to a point beneath the right scapula, with a history of irregular attacks of pain, are highly characteristic of gall-stones. A great many diseases in the neighbouring organs might be mistaken for them; he had also seen locomotor ataxia, pneumonia, and lead colic cause difficulty. A distended gall-bladder might be mistaken for other tumours, but rarely if sufficient care was taken. When gall-stones are limited to the gall-bladder and cystic duct, the operation mortality may be put at 1 per cent. Gall-stones in the common duct are dangerous to life; and he held, that apart from the mortality, the course taken by this painful disease amply justified operation. His later operations for the removal of common-duct stones had been followed by only a 2 per cent mortality, so that, in addition to the relief of much suffering, operation had saved many lives.

Where there is jaundice the difficulties of diagnosis may be considerable. Cancer of the liver, cancer of the bile-ducts, or interstitial pancreatitis may produce a very difficult series of symptoms. Interstitial pancreatitis is a very serious disease, frequently due to gall-stone in the common duct, and curable by surgical operation.

Examination of the urine is a great help if Cammidge's reaction is present. Chemical examination of the fæces is also of great help. Leucocytosis may be misleading.

When gall-stones are definitely diagnosed, the speaker said they ought to be removed. Cholecystostomy (emptying and draining the gall-bladder) is the best operation. After it there is seldom recurrence of stones, which recur just as often after cholecystectomy. This operation should only be performed when the gall-bladder or cystic duct is considerably diseased.

J. Bland-Sutton[4] thinks the time has now arrived when cholecystectomy (removal of the gall-bladder) should supplant the clumsy and unsatisfactory operation of cholecystotomy (drainage of the gall-bladder). Cholecystectomy, he thinks, is followed by a smaller mortality, healing is more rapid and more satisfactory, and experience teaches that the removal of this organ has no detrimental effect, immediate or remote, upon the individual.

Phlegmonous Cholecystitis.—G. A. Wright[5] concludes from three cases which had come under his observation that this condition is almost certainly fatal from peritonitis or from toxæmia, unless recognized and dealt with; and even after operation the mortality is exceedingly high. Diagnosis is difficult. It is liable to be mistaken for acute intestinal obstruction, acute pancreatitis, and acute appendicitis. Typhoid fever and gall-stones are the most common causes; probably irritation of the gall-bladder by calculi with resulting secondary infection by organisms is the most common sequence. The onset is usually, but not always, sudden. There are pain and tenderness in the gall-bladder area, and usually vomiting. Distention and rigidity are present, and more marked on the right side. Toxic symptoms with prostration are most severe. A failing pulse, delirium, dry tongue, twitching, suppression of urine, urticaria, and rigors, with other complications, may be present. It may or may not be possible to feel the gall-bladder. When the peritoneal cavity is opened, a coating of lymph may cover the gall-bladder or adjacent parts, or a cavity with doubtful boundaries may be broken into, or the distended gall-bladder, gangrenous in parts, may be quite distinct. The contents are bile and pus, and blood and stones, single or multiple, may be present.

The gall-bladder should be incised, emptied, and drained, or, if the patient is not too feeble, excised.

Glycosuria Depending upon Cholecystitis and Cholangitis.—C. W. Mansell Moullin[6] reports a case of this kind in a stout middle-aged woman. There was a history of gall-stone attacks, and on admission she was jaundiced, in very bad general condition, and her urine sp. gr. 1050, with an average of 7 grams of sugar in each 100 cc. A stone was found in, and removed from, the lower end of the common duct. The pancreas was firm and hard, but not to such an extent as to suggest any degree of chronic pancreatitis. Both gall-bladder and common duct were drained. In less than a month after operation all sugar had disappeared from the urine. The explanation offered is that septic inflammation spread up the duct into the pancreas, not involving it sufficiently to produce permanent change. "Hitherto glycosuria, when occurring in association with colecystitis and cholangitis, has been regarded as a bar to operation. As a matter of fact it is one of the strongest arguments in favour of it. Thorough drainage not only prevents further injury being inflicted upon the gland by the septic organisms that have invaded it, but, as in the above case, restores the gland to the condition in which it was before the septic invasion took place."

REFERENCES.—[1]*N.Y. Med. Jour.* Dec. 1, 1906; [2]*Brit. Med. Jour.* Mar. 28, 1907; [3]*Clin. Jour.* Aug. 4, 1907; [4]*Lancet*, Jan. 5, 1907; [5]*Ibid.* Sept. 22, 1906; [6]*Ibid.* June 26, 1907.

GANGOSA.—(*See* RHINOPHARYNGITIS.)

GANGRENE OF LUNG.

(*Vol.* 1890, *p.* 32)—**Myrtol** is used as a deodorant. It is given in capsules of ·15 gram each. Two or three of these may be given every two hours.

GASTRIC ULCER.

Robt. Hutchison, M.D.

ETIOLOGY.—C. H. Miller[1] attaches much importance to the part played by the lymphoid follicles of the stomach in the production of gastric ulcer. In cases of "gastric erosion" characterized clinically by hæmatemesis, and in which no ulcer is found at operation, he finds that the follicles are swollen, and many of them in a state of disintegration and pushing their way to the surface. In other places they may have burst and left the basement membrane exposed to the action of the gastric juice. The vessels of the submucous coat are engorged, and digestion of their wall causes the hæmorrhage. The whole process is merely the reaction of inflammation in lymphoid tissue complicated by the digestive action of the gastric juice. The final stage in the process may be the production of an ulcer.

Turck[2] has succeeded in producing peptic ulcers in dogs by feeding them with a certain strain of *Bacillus coli communis* for several months. Death occurred from hæmorrhage or perforation. Mechanical and chemical irritation failed to produce ulcers, but unfavourable hygienic surroundings, e.g., confinement in close quarters for a long time, seemed to favour their appearance.

Calwell,[3] in a paper on the age incidence of gastric ulcer in the male and female, concludes that there is presumptive evidence that a large number of cases of "dyspepsia" in the adolescent female are really due to ulcer; that these ulcers rapidly form and probably as rapidly heal, and that it is only by the accident of hæmorrhage or of perforation, or of repeated relapses leading to chronicity, that we recognize their real nature; and, lastly, that there are apparently two kinds of ulcer: one, connected in some mysterious way with chlorosis, and frequently with amenorrhœa, probably being a developmental disease; the other being a type which occurs pretty equally in both male and female, and is not often seen till after twenty. The author therefore urges that cases of "dyspepsia" in young chlorotic women should be treated like cases of ulcer.

Treatment.—In a clinical lecture Robin[4] outlines his method of systematic treatment of simple ulcer. Treatment should be begun as soon as the existence of an ulcer is even *suspected*, and the first and most essential part of it is *absolute rest*. If there has been a recent hæmorrhage, or it still continues, he orders an **Ice Bag** to be placed upon the epigastric region. This becomes useless when the bleeding stops, which can be recognized by the cessation of melæna. The giving of food and drink by the mouth—even a drink of water—is prohibited. In order to nourish the patient and to make up for his loss of water, he is ordered rectal irrigations and nutritive enemata. To quiet the thirst, 250 to 300 grams of boiled water are injected every six hours. One hour later, he is given the following enemata :—

℞ Eggs (beaten up) - - - - -	2
Liquid Peptone - - -	2 to 3 tablespoonfuls
Solution of Glucose (20 %) - - - -	100 grams
Pepsin (strength 50) - - - -	1 gram
Sodium Chloride - - - - -	0·5 gram
Sydenham's Laudanum - - - -	11 drops
Concentrated Bouillon - - -	q.s. to make 250 cc.

It is not advisable to add wine to this enema, since Metzger has shown that when wine is introduced into the rectum it notably increases the gastric secretion. The first day of this absolute rest of the stomach is rather troublesome, but generally by the second day tolerance is established. Should the rectum be very irritable, the salt may be omitted from the formula, or the peptones, which sometimes set up a little diarrhœa. It may be necessary to increase the quantity of laudanum by a few drops. This will generally overcome all difficulty on the score of intolerance. If the thirst should be so great that the quantity of water proves insufficient, then the injections may be given closer together, say every four hours. Small pieces of ice may be sucked, or a teaspoonful of pure water containing a drop of laudanum may be given by the mouth. In order to prevent parotitis from infection through the duct, the following solution is ordered :—

℞	β-naphthol	0·2 gram	Tinct. of Aconite Root	2 grams
	Sod. Biborate	15 grams	Boiled Water q.s. to make	1 litre
	Mint Water	200 grams		

This is to be warmed and applied by means of a tampon of cotton so as to thoroughly clean the walls of the mouth and the teeth. The following may be regarded as indications for suspending the absolute rest of the stomach : (1) The disappearance of all pains, either provoked or spontaneous ; (2) The lowering of the blood-pressure to an exaggerated degree ; (3) The diminution of the daily discharge of urine below 400 cc. ; (4) The too rapid or exaggerated diminution of the body weight ; when at the end of six or twelve days it is found that the loss amounts to three kilos, it will be advisable to interrupt the treatment ; (5) Decided failure of the general strength, with syncopal tendencies. It is, however, very rarely that the treatment has to be interrupted. The average duration of total abstinence in Robin's cases was nine days. It is rarely necessary to go as long as fifteen days, and ten may be regarded usually as the limit. When cicatrization has occurred, the patient is gradually placed upon an absolute milk diet in the following way : On the first day, one nutritive enema is omitted and the patient is allowed to drink 100 grams of milk during the day, a very little at a time. The second day, another enema is omitted and 300 grams of milk given. This is continued each day until on the fourth day the four enemata are replaced by 600 grams of milk given by the mouth. The milk is given at intervals of four hours on the second day, three and a half hours on the third day, and three hours on the fourth day : afterwards in six doses of 200 grams at three-hour intervals. The dose each day is to be increased by 50 grams, until the patient is taking daily three or even four quarts. It is never advisable to go beyond this quantity. The milk diet is to be continued until the patient regains his strength and weight. As a rule two months is needed at the least, and four months are required if the patient has had hæmorrhages, or has pyloric stenosis. Following the milk diet, a mixed vegetable and milk regimen is followed. At the end of fifteen days milk is no longer given with the meals, and pure water is substituted. Then a little boiled fish or a piece of roast chicken is allowed, and gradually the patient returns to his ordinary mixed diet in the course of two to four weeks.

REFERENCES.—[1]*Brit. Med. Jour.* Dec. 1, 1906 ; [2]*Ibid.* April 20, 1907 ; [3]*Ibid.* Jan. 5, 1907 ; [4]*Bull. Gén. de Thérap.* Abst. N.Y. *Med. Rec.* Dec. 9, 1906.

GASTRITIS (Chronic).

(Index of Treatment, p. 341)—*Diet :* Exclude fats and cellulose, also alcoholic and iced drinks, and all "hot" condiments. The basis of the diet should be minced lean meat, with milk, and plenty of hot water. *Medicine :* Check gastric irritability with ℞ Sodii Bicarb. et Bismuthi Carb., āā gr. x; Pulv. Rhei, gr. iiss; Mucil. Tragac. ♏xx; Aq. Menth. Pip., ad ℥j, before each meal. For acid eructations: ℞ Sodii Bicarb., Bismuth. Carb., et Magnesii Carb., āā gr. x; Succ. Taraxaci, ʒj; Aq. ad ℥j: three times daily, or before each meal. For anorexia: ℞ Sodii Bicarb., gr. x; Tinct. Rhei, ♏xv; Tinct. Zingib. fort., ♏v; Inf. Gent. Co., ad ℥j: before each meal For constipation, give Sodii Sulph. Efferv., ʒj or ʒij, every morning before breakfast. For convalescents a bitter-acid mixture is useful.

GASTROPTOSIS.

Robt. Hutchison, M.D.

In an excellent article on this condition, Lockwood[1] divides the clinical course into three stages: (1) Gastroptosis alone, no symptoms; (2) Gastroptosis and temporary atony, intermittent symptoms; (3) Gastroptosis and permanent atony, continuous symptoms.

The chief complaints are of discomfort after food, flatulence, and heartburn. In the second stage these come and go, depending on the patient's general condition of health; but in the third stage they become permanent. As regards flatulence, the author makes the following interesting remarks: "Given a thin woman with constant gas, always suspect gastroptosis in its atonic stage. This gas is often spoken of as due to fermentation, and the patient in consequence is shut off from starches and sugars. Except in cases of pyloric obstruction, with enormous quantities of prolonged food retention and with a reduction in the amount of hydrochloric acid, as in some of the malignant cases, I am confident that fermentation in the stomach is a myth. Would that the name could be totally expunged from our records. You cannot make the gastric contents from these patients ferment. I have aspirated the gas from their stomachs by catching it in a deflated toy balloon tied on the end of a stomach tube, and on analysis of this gas found no CO_2—merely atmospheric air. Again, the higher the gastric acidity in these cases, the more the gas. In other words, the more sterile the contents, the greater the so-called fermentation; which is, of course, an absurdity."

Diagnosis.—Inflation is perhaps the most certain of all the methods of diagnosis, and (ulcer and carcinoma being excluded) is devoid of danger when reasonably employed. It is never necessary to inflate sufficiently to cause pain, nor so that the stomach is seen bulging out the abdominal wall. It is merely necessary to employ a moderate inflation, so that tympanitic sounds by percussion over the stomach are clearly brought out. Even with this it is possible to see the lower curvature ascend and descend during respiration, if a strong light is thrown obliquely across the body of the patient so as to intensify the shadows.

For the purpose of inflation he employs a level or scant teaspoonful of bicarbonate of soda and one-quarter of this amount of tartaric acid, and has never had occasion to regret these quantities.

Gastrodiaphany is absolutely inaccurate and misleading, either with or without fluorescent media, and the author has long since abandoned its use.

TREATMENT.—In the treatment of advanced cases one cannot succeed unless the patient is made to lie up and go through a rest cure. This comprises rest in bed, massage, hot abdominal fomentations, and application of electricity. The diet should be about as follows :

Breakfast—Cocoa; cereal, with cream and sugar; minced meat on toast, or soft boiled eggs; roll, butter, marmalade.

11.0 *a.m.*—Russell's emulsion.

1.0 *p.m.*—Fish or chicken, or bird; two vegetables; a farinaceous dessert (cornstarch, farina, or rice pudding).

4.0 *p.m.*—Either the remains of the farinaceous pudding, or junket, or malted milk.

7.0 *p.m.*—Like the meal of 1 p.m.

9.0 *p.m.*—The meal like the 4.0 p.m.

Throughout the day cream (16 per cent to one pint) is to be given. Liquids at meals are to be restricted. No fruit or red meats are to be allowed.

As regards medicines, Lockwood believes the **Bromides** to be indispensable at first. Later he uses tincture of **Physostigmine** in doses of 10 to 15 min. twice or thrice a day.

During this treatment the patients rapidly improve. The weight increases, the average gain being ten to twelve pounds in the four weeks, and the lower curvature of the stomach rises, so that at the end of the four weeks it lies just under the navel. This rise of the lower curvature is no idle fancy ; it is to be regularly expected. During the four weeks intragastric faradization may be employed ; but the author is using it less than formerly, and finds that the majority of patients do as well without it. In impressionable patients, however, it has a very decided mental effect. The return to ordinary daily life must be gradual, and a week at least should be taken for what may be called the hardening process.

For a month after the rest cure patients must be careful about overdoing themselves, must lie down every day after lunch, and wear an abdominal belt. Food between meals must be continued, liquids at meals interdicted, and no raw fruit allowed. In nearly every case, the first week after the rest cure the patients lose a little in weight and complain again of their gas and distress. These symptoms will pass in a few days, but it is well to warn patients in advance.

Under this treatment the patients usually gain in nutrition steadily for weeks or months. They gain on an average ten pounds in the rest cure, but at the end of the year they are often thirty pounds heavier, and somehow or other the stomach stays up in place. The results are so good from such simple means that operation on these stomachs is out of the question, and should be considered a surgical disgrace.

REFERENCE.—[1]*Med. Rec.* July 20, 1907.

GASTROSCOPY. (*See* STOMACH.)

GLANDERS.

E. W. Goodall, M.D.

A case of this disease occurring near Waterford, which presents points of interest, has been put on record by E. F. Stephenson.[1]

The patient was a man aged 21, a farmer's son. He fell ill on October 1st, 1904, with general malaise and pains. Four days previously he had been engaged in removing an old manure heap in a stable yard. He was at the time suffering from neuralgia, and picked his teeth with his finger nail. He was not seen by the reporter till October 15th. The chief symptoms then were: many nodules on gums and hard palate; teeth loose, fœtid pus between them and gums; a hard, nodular, painless mass fixed to right lower jaw; a dusky red, phlegmonous patch on the skin of the chin; an offensive discharge from the left nostril; many subcutaneous nodules on forehead, chest, abdomen, and back: the skin red over most of them. The nodules on the palate broke down and discharged pus and blood. The patient gradually became feebler and delirious, and there was fever. He died on October 28th.

The only source of the illness that could be traced was a horse that had been ill in 1902, which had occupied the stable and yard mentioned. From the symptoms it seemed almost certain that this horse had suffered from glanders, though it recovered, and had been sold. It had been ill for three or four months, the principal symptoms being soreness of the throat and nose, with embarrassed breathing, and abscesses on the head and body. These had been lanced, and the matter from them had spurted about the yard. After the horse had been removed the stable had been limewashed, and all the manure removed with the exception of some which was allowed to remain in the yard. This had been covered with fresh manure; (another horse had been put into the stable). It was this old manure that the patient had been removing when he became ill with glanders.

The farmyard was in a very insanitary state. In May, 1903, the patient's mother had died, and in October of the same year his brother. The disease was stated to have been pneumonia in the first case and abdominal abscess in the second. A fatal case of pneumonia had also occurred in a house close to the farm.

REFERENCE.—[1]*Dub. Jour. Med. Sci.* Jan. 1905.

GLAUCOMA.

A. Hugh Thompson, M.D.

DIAGNOSIS.—In early cases the tension is apt to be variable, and the ophthalmoscopic appearance of the disc ambiguous. The field of vision tested in the ordinary way may also be full. A most important aid to diagnosis in cases of doubt is *Bjerrum's sign*. To obtain the physiological field of vision by testing with an ordinary perimeter, it is necessary that the test-object should subtend a visual angle of not less than $\frac{1}{2}$°. With McHardy's perimeter, with which the patient's eye is 300 mm. from the test object, the size of the latter must be at least 2·7 mm. square. Larger objects than this give the same but no larger field of vision. Smaller objects, however, so long as they are visible at all, are so within a smaller field, and the size of the field diminishes directly as the size of the object. Bjerrum devised a method of testing the field for small objects by means of a large screen, and Priestley Smith has simplified the method by a device which he calls a scotometer. This is a very convenient device for a busy ophthalmic surgeon, but it is not absolutely necessary, for with care and the use of a sufficiently small test object (say 1 mm.), the facts can be demonstrated with an ordinary perimeter, such as McHardy's.

PLATE XVII.

LAGRANGE'S OPERATION

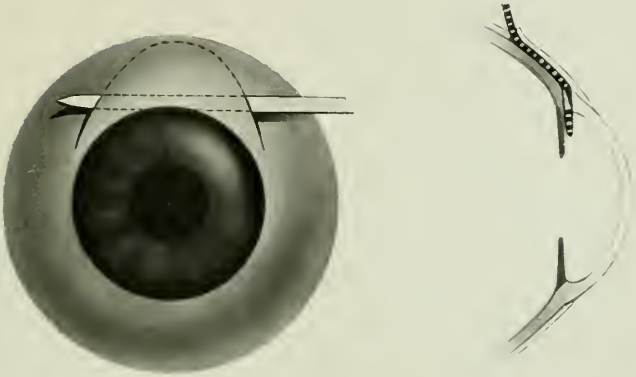


Fig. A.

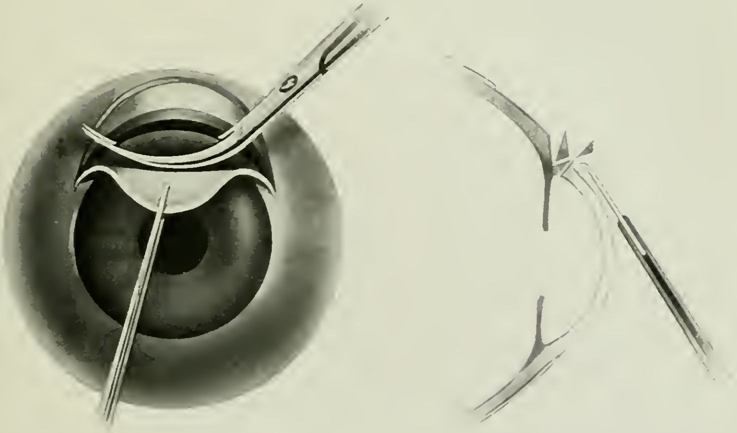


Fig. B

LAGRANGE'S OPERATION

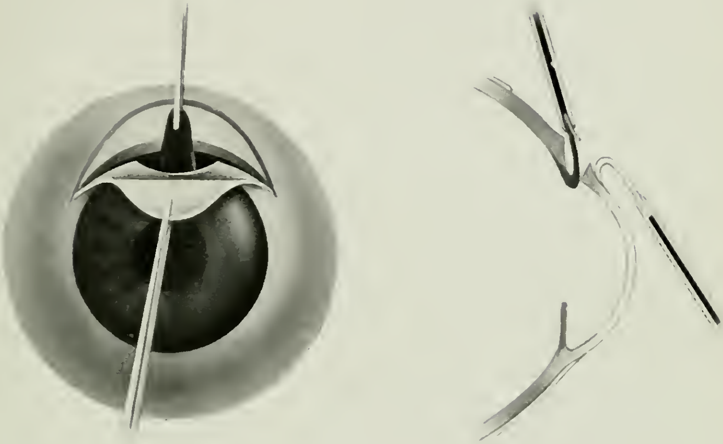


Fig. C.

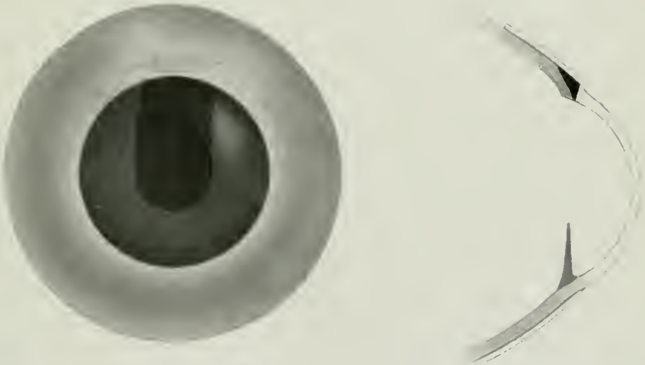


Fig. D.

The important point is that in pathological conditions the reduction of the field when small objects are used is different in kind and degree from the reduction in the physiological condition. In glaucoma, the special sign which Bjerrum discovered is, that there is a so-called "relative" diminution of the field (i.e., diminution for small objects) which is sector-shaped, and extends as far as the blind spot before any diminution in the periphery of the field can be discovered by ordinary methods. A good account of Bjerrum's method, with several original glaucoma charts, was published by Sinclair in 1905,[1] and an account by Priestley Smith of his simplified method the following year.[2] The best plan is to rotate the test object in successive circles concentric with the fixation point. The blind spot will always be found 15° from the fixation point. At 20° we are well outside it: at 10° we are well within it. If, says Priestley Smith, we explore the 25° circle carefully, and also the 10° circle, and fail to find any scotoma for a small test object, we may be *almost* sure that there is no glaucoma.

Lagrange's Operation.—In last year's *Medical Annual* a short account of Lagrange's operation—a combined iridectomy and sclerectomy—was given. This year we are able to produce illustrations from a paper by him read at the ophthalmological congress at Oxford, and recently published.[3]

Plate XVII, Fig. A shows the initial section in the sclera, which enters the angle of the anterior chamber, and by the rotation backwards of the knife bevels the sclera, and makes a large conjunctival flap. *Fig. B* shows the flap of conjunctiva grasped by a small toothed forceps and turned forwards over the cornea, while the small piece of sclera which is left attached to the cornea is cut off by well-sharpened and strongly-curved scissors. *Plate XVIII, Fig. C* shows the iris grasped with iris forceps, about to be cut with iris scissors. *Fig. D* shows the result of the operation, the object of which is to obtain a permanently pervious cicatrix without the danger which, in the opinion of most surgeons, attends the adhesion of any iris tissue to the scar.

For a caution as to the use of **Dionine** in glaucoma, *vide* EYE, GENERAL THERAPEUTICS OF.

REFERENCES.—[1]*Trans. Ophth. Soc.* vol. xxv. p. 384; [2]*Ibid.* vol. xxvi. p. 215; [3]*Ophthalm.* Sept. 1907.

GLYCOSURIA. (*See* DIABETES and GALL-BLADDER.)

GOITRE (Exophthalmic).

Robt. Hutchison, M.D.

TREATMENT.—In a lecture on this subject, Schlesinger[1] points out that if the disease be diagnosed early, it is our duty to try to arrest its progress if possible. Drugs such as thyroid gland, ovarian tabloids, or iodide preparations, will not give immediate relief, nor is this so available at this stage of the disease as a modification or correction of diet and habit. First of all prohibit smoking and drinking; if the latter must be retained, let it be moderate, in small quantities of beer. All gaseous foods, or foodstuffs likely to produce flatus, should be forbidden, and with this principle in view, every form of milk diet should be encouraged. The **Open-air Rest Cure** is as valuable in this disease as in tuberculosis, and should be enjoined in some form. **Hydropathic Treatment,** when prescribed, must be proceeded with carefully, and should not extend beyond luke-warm baths, with cold affusions to the neck by means of a sponge or towel. It would be better to commence with separate parts of the body, gradually increasing the area till Shepmann's douche could be applied to the spine with tepid water. When the heart is painfully throbbing, some cold object, such as a cold-water bottle of india-rubber, aluminium, lead, or vulcanite, may be applied. Winternitz is strongly in favour of the hydropathic treatment, on the ground that it improves the appetite and hastens metabolism, and perhaps it does more to calm the heart and relieve the nervous irritation than any of our more recent novelties. It has proved successful in Winternitz's hands, but it must be undertaken with great care. Along with this may be combined with great advantage later the **Electric Treatment** in the galvanic form. The current may be passed through the gland and sympathetic nerves by placing one electrode in front of the thyroid and another on the spine, or the poles may be placed on either side of the gland itself. Allowance must be made, after repeating the treatment, for the loss of cutaneous resistance, or you burn the patient severely. Although sceptical of electric treatment generally, he must confess that he has seen the frequency of the pulse reduced and the gland diminish after a course of treatment of this kind. With even two- or four-celled baths most of the symptoms may disappear—even the diarrhœa and palpitation.

It often happens that a combination of these remedies has more effect in relieving the patient than any single course, however rational it may seem to the physician. Though bathing, for instance, is dangerous, it will give instant relief to the vexatious feeling of heat. The great weakness, and danger of sudden collapse are the first objects of care, while complications increase the difficulties. Anything, therefore, that will allay pain, improve the appetite, increase metabolism, and add to the body weight, should be the aim of the attendant. All observers agree that the increase of body weight is a good measure of improvement, indicating the close of the acute stage.

From **Rodagen** he has only had fairly good results, and regards it as ameliorative rather than curative. It is also so expensive and its results are so uncertain that he cannot recommend it. Nor has **Moebius's Serum** proved satisfactory in his hands, although he has given it, for prolonged periods and in various forms, to a considerable number of patients. Operation should only be advised in very severe cases. Injection of **Iodoform Ether** has occasionally met with some success. Application of the **X Rays** direct to the goitre has resulted in great temporary improvement in some of his cases, but as soon as their application was discontinued the patients relapsed.

As regards drugs, thyroid and iodide preparations are dangerous, and ovarian and thymus preparations useless. **Phosphorus** is more useful than any other drug. Half a milligram should be given in pill twice daily, or it may be administered in cod-liver oil. A gram or two of the phosphate of soda may be given daily with the same benefit. Strychnine and quinine are useful as general tonics, and arsenic (preferably in the form of cacodylates) and iron if there be anæmia. Bromides are the best sedative.

Ewing,[2] in an elaborate paper on the **Serum-therapy** of exophthalmic goitre, admits that there is a good theoretical basis for its employment, but that there are many considerations pointing to extensive limitations to its possible usefulness. His general opinion appears to be that all the methods of serum treatment as yet introduced are of very doubftul value.

REFERENCES.—[1]*Med. Press*, Oct. 17, 1906; [2]*N. Y. Med. Jour.* Dec. 1 and 8, 1906.

GOITRE (Simple). *Robt. Hutchison, M.D.*

ETIOLOGY.—Martin,[1] as the result of an enquiry into the causes of simple goitre (thyreocele) as met with in Staffordshire, arrives at the following conclusions: (1) That a call for increased functional activity is sufficient cause for simple enlargement of the thyroid gland; (2) That such a call is frequently given by the metabolism of the organism in connection with growth and development, with the performance of the uterine functions in the female, and with the chlorotic conditions of young girls; (3) That the phases of enlargement of the thyroid included under the term "thyreocele" are a response to such an appeal from one or more of the above causes in an individual whose thyroid function is feebly performed; (4) That as undue physiological activity is a potent cause for pathological change, so this simple hypertrophy, when necessitated for prolonged periods, lays the foundation of the pathogenesis of the degenerate cystic and adenomatous bronchocele; (5) That there is often some influence exerted by heredity upon the thyroid function.

As regards the action of a possible "endemic factor," he points out: (*a*) That the only condition common to all cases is the water, which has derived its contents from the rocks through which it has percolated; (*b*) In no case has the water shown much total solid impurity; (*c*) The cases have occurred indiscriminately on the sandstone and millstone grit; (*d*) If there is an endemic influence it is not contained in the lime and magnesium constituents, many waters being much harder and producing no goitre; (*e*) Its action is only a slight one, and may serve merely to accentuate the changes in the gland due to the causes mentioned above.

McCarrison[2] has continued his observations on the etiology of endemic goitre in Gilgit (Kashmir). He is of opinion that "it is to no dissolved ingredient in the water that goitre is due," and that "if water is the chief vehicle of infection it is not the only one." His general conclusions as to the etiology are as follows: (1) Goitre is caused by an organism invading the body of man. All the evidence so far accumulated points to the intestine as the seat of infection; (2) In nature it lives in the soil of infected localities, and is very limited in its distribution; (3) It is conveyed to man in the drinking water, by contact with soil, or by other means yet undetermined; (4) It requires a calcareous soil to enable it to flourish and produce goitre; (5) It can be conveyed by man to places where the disease has not hitherto prevailed, and, if the conditions are favourable there, it can produce the disease; (6) The virus is, therefore, given off by persons suffering from the disease, in some way as yet undetermined, but not unlikely by means of the fæces; (7) The fact that it requires peculiar conditions of soil, etc., suggests a stage of development outside the body of man; (8) There is reason to believe that it is destroyed by admixture with pure water; (9) The organism flourishes best where there is a certain degree of moisture; (10) The organism requires a certain temperature, in all probability, to favour its development; (11) Where it gives rise to an epidemic the most susceptible individuals suffer most and first—namely, the children; (12) There is reason to believe that where the disease has prevailed for years a natural immunity is developed; (13) Those who come into close contact with the soil in their daily occupations suffer most; (14) New-comers to a district acquire the disease very rapidly, from three weeks to one month being the minimum incubation period of this disease—20 per cent of new-comers suffer; (15) Goitre shows a marked seasonal prevalence; (16) Goitre disappears when the patient leaves the infected area, and cannot arise in the new area to which the patient goes unless the above conditions for the growth of the organism are present—calcareous soil, moisture, virus of the disease, and susceptible individuals; (17) The duration of life of the organism in the body of man is not great, as shown by the fact that the gland diminishes in size when the patient leaves the infected area; (18) An organically impure water may favour the spread of the disease; (19) All races suffer; (20) Women suffer more than men; (21) Certain conditions, such as emotional disturbances, attacks of fever, etc., act as predisposing or favouring causes; (22) Boiling and filtering the water alone do not prevent or cure the disease so long as people live on the infected site; (23) Domestic animals do not suffer from goitre or cretinism in Gilgit; (24) Large communities living on the infected site often escape, groups of houses also escape the disease; (25) Certain blood changes occur in goitre, of an uncertain nature, but suggesting, from analogy with other disease, a parasitic or bacterial invasion of the intestine; (26) Goitre is rapidly cured by the administration of intestinal antiseptics.

It appears, then, that the disease, of which the enlargement of the thyroid gland is the external indication, differs little from other diseases of an infectious nature. The enlargement of the thyroid is not in itself the disease. In its beginning it is a pure hypertrophy, a protective increase in size, comparable to that of the spleen in certain other infectious diseases, and, like the spleen, it returns to its normal size when the causes which have stimulated the exercise of the gland's protective function have been removed.

Treatment.—Acting on the above view of its infective nature. McCarrison was led to try the effect of the administration of intestinal antiseptics upon it. He describes his results as follows :—

"The cases selected were those in which no secondary changes had taken place in the gland. The drug selected was **Thymol.** The good effect of this line of treatment was immediately apparent. Cases of recent origin react at once, and in some the enlargement of the gland disappears with extraordinary rapidity. The swelling, in the course of the first week of treatment, becomes soft, and gradually disappears after a longer or shorter period, depending apparently on the age of the goitre. I have now cured twenty-five cases of goitre by means of thymol, the most rapid disappearance having taken place in seventeen days, while the longest period over which the drug has been employed was sixty days. My practice is to administer 30 gr. on the morning of the first day of treatment, followed by a purge the same evening, after which 10 gr. night and morning are given in cachets. A large dose of 30 gr. is administered twice a week, followed by a purgative. The treatment is kept up without intermission till the swelling disappears. No ill-effects have been observed to follow the use of thymol administered in this way. For the most part the cases cured by thymol have been of about three months' standing. In several instances, however, the duration of the disease has been one year and over.

"**β-naphthol** also appears to act beneficially, though it has not been given the same extended trial as thymol.

"Not only is thymol beneficial in early cases, but it is so in all cases in which the swelling is progressing. Among the troops it is not uncommon to see men on arrival in Gilgit, who have served here before, who have a small unilateral enlargement of the gland which even removal from the district had not caused to disappear. The thyroid in these cases invariably enlarges again in Gilgit, and thymol has rapidly reduced it in all the cases in which I have adopted this line of treatment. In old-standing cases the seat of adenomata, the gland around the nodular masses, becomes softer and retreats from the tumours, so that these latter are more readily visible or palpable.

"Occasionally distressing symptoms are complained of by sufferers from goitre, such as feelings of suffocation, inability to sleep, etc., though these are more rarely met with than we might expect. Symptoms of this sort were relieved, in the two cases in which I have had an opportunity of trying the drug, in a marked degree, and that very rapidly, by the use of thymol. I have observed, also, in some early cases that even in as short a time as two or three days a noticeable difference is detected by the surgeon, as well as by the sufferer, in the size of the gland.

"It is as common to see new cases of enlarged thyroid here in the spring as it is to see new cases of enlarged spleen in the autumn. I now approach the treatment of the former by means of thymol with as much confidence as I do the latter with quinine. Most enlarged thyroids (those in which the gland is itself diseased and altered by secondary changes excepted) disappear with as much rapidity under thymol as do most spleens under quinine. I say 'most thyroids' and 'most spleens' advisedly, for there is no more reason for assuming that all enlarged thyroids are due to an infection of the intestine than for attributing all enlargements of the spleen to the hæmamœba of malaria. Exophthalmic goitre is so rare in Gilgit that I have not had an opportunity of trying thymol in this disease. I would suggest its use in this affection."

REFERENCES.—[1]*Brit. Med. Jour.* Sept. 22, 1906; [2]*Lancet*, Dec. 8, 1906.

GONORRHŒA.

J. W. Thomson Walker, M.B. F.R.C.S.

In an article on the statistics of gonorrhœa in men and their results in married women, Erb[1] refers to the figures that have been presented by other observers. Ricord stated that 80 per cent of the men in Paris had suffered from gonorrhœa. Lesser[2] says that the majority of men suffer from gonorrhœa at some part of their lives. Doctor[3] states that over 80 per cent of men suffer from the disease. Blaschko[4] made statistics on a single day (April 30th, 1900) in Berlin, and found eighty-three in 10,000 adult men suffering from gonorrhœa. By an obscure calculation he arrives at 240 as being the proper figure for one day, and reckoning for the year, he believed that 1920 out of 10,000 adult men were affected, and "that in a large city like Berlin, in one year, of 1000 young men between twenty and thirty years of age, about 200 were infected with gonorrhœa." He calculates that "a young man after five years of celibacy would acquire gonorrhœa once, and after ten years' celibacy twice," and he arrives at the following extraordinary conclusion: "Of the men who marry after the age of thirty, each has twice had gonorrhœa." The method of dealing with these figures is severely criticized by Erb, who points out that similar methods were used by Gruber when he stated that in the department where the Berlin students were medically treated, 25 per cent suffered from venereal diseases: "therefore each student in Berlin suffered from venereal disease every four years." Of 2000 men over seventy-five years, suffering from all manner of diseases, examined by Erb, 48·5 per cent had suffered from gonorrhœa. Out of 368 cases, the gonorrhœa was acquired between the ages of sixteen and twenty-five in 312 (84·7 per cent), between twenty-six and thirty in 42 (11·4 per cent), between thirty-one and forty in 12 (3·2 per cent), and over forty in 2 (0·5 per cent).

Erb then discusses the question of the results of male gonorrhœa on women, marriage, and the number of children. According to Fehling, 70 to 80 per cent of childless marriages are due to gonorrhœa. Lesser holds that the "one-child marriage" is the type which results from gonorrhœa. In 400 cases where men had suffered from gonorrhœa for a variable time before marriage, Erb found that the wives did not suffer from gonorrhœal pelvic disease in 375 (93·75 per cent); that pelvic disease, either certainly or very probably gonorrhœal, was present in 17 (4·25 per cent), and pelvic disease, probably not gonorrhœal, in 8 (2 per cent).

In regard to the number of children, this observer found, in 370 of these women, 89 had two children, 69 three children, and 94 had from four to ten children. That is to say, in 370 wives of men who had previously suffered from gonorrhœa, where the women remained healthy, 68 per cent had two or three children. Erb remarks that there is little of the "poisoning of marriage" and "unfruitfulness" in these figures. In these marriages there were also 74 with only one child. Of these, in 13 no more children could be born, in 17 from the short duration of marriage no more children could be expected, and in 44 the conditions were unknown. In the 370 there were 44 childless marriages (12 per cent), and at least 4 of these were referable to other causes, such as short duration of marriage, retroflexion of the uterus, myoma, etc., and in 40 the cause was not known. The interval between the attack of gonorrhœa in the man and marriage varied between one and twenty-two years, and was seldom under three years. There were five cases where the marriage took place one year after the gonorrhœa, and four of these women were healthy, with one to six children, and only one diseased, with two children, and not certainly gonorrhœal. There were twenty-four cases with an interval of two years between the gonorrhœa and marriage, and of these nineteen were sound and five diseased, of which one was doubtful. Therefore Erb judges that a short interval of time between the gonorrhœa and the marriage does not involve particular danger to the female if the gonorrhœa is healed. In the twenty-five diseased women, eleven were childless, ten had one child, two had two children, one three children, and there was no information in regard to one case. But these women were not all gonorrhœal, and some had not been sufficiently long married to judge. He claims that these statistics show that gonorrhœa does not in the greater number of cases have an important influence on the health of married women or on the fruitfulness of marriage.

SYMPTOMS.—In a paper read by W. S. Stone[5] before the New York Medical Society on gonorrhœa in women, the following opinions were expressed. The common idea that the urethra rarely escapes infection early in the course of the disease is true, although functional disturbances of the bladder from other causes are so frequent in women that the physician may not be consulted until the urethritis has subsided. The entire length of the female urethra is usually involved, but the disease is milder and of shorter duration than in the male. With appropriate treatment the disease lasts from four to six weeks, but without treatment the involvement of Skene's ducts occurs in a large number of cases, and prolongs the disease for an indefinite period. Frequency of micturition and more or less vesical tenesmus, are rarely absent, and are due to congestion of the neck of the bladder, Gonorrhœal cystitis is rare. This observer has only seen one case of stricture of the urethra following upon gonorrhœa. The vagina is comparatively invulnerable to the invasion of the gonococcus except in young girls before puberty, in adult women during pregnancy and the puerperium, and in elderly women at the time of the menopause. "It is commonly taught that on account of the rudimentary condition of the uterus and adnexa before puberty these organs are rarely involved, but the reports of cases of obscure peritonitis in female children are rapidly accumulating, so that this observation may not be so true as it was once thought to be." Infection of Bartholin's glands is usually confined to the ducts, and when the glands are involved it is generally regarded as a mixed infection. The infection of these ducts is much less frequent than that of the urethra, and usually occurs later in the disease as the result of the stagnation of gonorrhœal discharges about the genitals, and thus is largely preventable. The smallness of the openings of these ducts accounts for their escape in a certain number of cases, for in children, in which the openings are very small, the ducts are scarcely ever involved.

TREATMENT.—Ganz[6] advocates the use of **Arhovin.** This is an aromatic liquid soluble in chloroform, ether, and alcohol, but insoluble in water. Taken internally it is quickly absorbed, and appears in a different form in the urine. Arhovin is also useful as an external application. It hinders the development of various bacteria, and in a 5 per cent solution completely destroyed, after one or two hours, pure cultures of gonococci. Arhovin may be used as a 1 to 5 per cent solution of olive oil. In sensitive patients, and when an injection cannot be used, it may be made up as a small bougie (0·05 arhovin to 1·0 oleum cacao), and in the female as globuli arhovini (0·1 arhovin to 2·0 oleum cacao). In acute gonorrhœa, after the subsidence of the most severe symptoms, arhovin may be used in 1 to 2 per cent solutions, which are rapidly raised to 3 and even 5 per cent. In acute posterior urethritis, when the most acute symptoms begin to subside, injections may be made as in the anterior urethra or by Janet's lavage.

W. Zeuner[7] suggests **Insufflations** as a method of treating gonorrhœa. For this purpose he uses a bent glass tube, at one end of which is a rubber tube and ball, while the other end has a rubber point. The patient is directed to pass water, and the rubber point is then introduced into the meatus and the bulb smartly compressed four times. **Phenyform** and **Zeroform** powders are used. In acute gonorrhœa the insufflations were made four times daily, in chronic urethritis twice a day.

La Roque[8] recommends the use of **Iodide of Silver** in acute and chronic gonorrhœa. He first irrigates the bladder by Janet's method with plain, hot, sterile water, or 1–10,000 solution of potassium permanganate, and then fills up the urethra with a 10 per cent suspension of iodide of silver in mucilage of quince-seed. This requires three syringefuls, and should be repeated three or four times daily. The bladder irrigation is repeated twice weekly.

Gardner,[9] of Buffalo, has adopted Rucker's method of **Packing the Urethra** with cotton cord (see *Medical Annual*, 1905), and recommends its use in cases of chronic urethritis. He found that curved glass tubes were more easily introduced than Rucker's straight tubes. He uses an oil as a base for the drugs to be applied, as it prevents adhesion of the cord to the mucous membrane. The patient passes water, the urethra is then packed, and the urine retained as long as possible. A small amount of urine is then passed, and this forces out the packing, a little assistance being sometimes required by pulling on the end of the strand. The packing is carried out as follows: A tube of suitable size is selected, and the soft cotton cord is pushed through it with the obturator, as much as is intended for use being pulled out at the distal end. If the lesion lies in the first three inches, then three inches of cord are pulled out and steeped in the oily solution. The cord is then pulled out till about an inch of the saturated portion remains in the tube, the rest hanging down from the proximal end. The tube is inserted into the urethra past the affected area. The obturator is now inserted, and the cord pushed along the tube. The tube is withdrawn half an inch, and this length of the cord is projected beyond its end by the obturator. The tube is now pushed forward again so as to cover the obturator, both are withdrawn a little, and the manœuvre is repeated until the cord is left in the urethra with a short length projecting from the meatus. The following solutions have been found useful:—

R	Ichthyol	ʒj	Balsam of Peru	ʒiij
	Resorcin	gr. xl	Castor Oil	ad ℥iv
R	Lignol		Castor Oil	ʒj
	Balsam of Copaiba	āā ʒj	Olive Oil	ad ℥iv

L. Bazet,[10] of San Francisco, states that the "greatest and quickest relief in the treatment of blennorrhagic epididymitis is accomplished by **Epididymectomy.**" In 1897 this surgeon incised the globus minor and stitched the edges of the opening to the skin. On subsequent cases he did a partial epididymectomy, hoping that the tubules would subsequently anastomose. He later abandoned this operation, and performed **Epididymotomy,** and packed the wound with gauze impregnated with 1–10 ichthyol and glycerin. Recovery was more rapid than in cases treated by non-operative measures. In eight years he has operated on sixty-five cases, and found the gonococcus in one-third of these cases. Other surgeons have adopted similar measures. Baernaman in 1903 treated twenty-eight cases of epididymitis by puncture. The operation was very painful, but was followed by good results. In 1905 Belfield, of Chicago, recommended incision and drainage of the epididymis.

F. R. Hagner[11] believes with Belfield that in cases of gonorrhœal epididymitis where the tunica vaginalis contains fluid and there is œdema of the skin, foci of pus are present at some parts of the epididymis in a considerable proportion of cases. He admits that most cases recover with medical treatment alone, but considers that many of the severe cases are analogous to pyosalpinx, and recommends incision into the globus minor, free evacuation of the pus, and drainage. The following technique is recommended : An incision 6 to 10 cm. long is made at the junction of the enlarged epididymis with the testicle, and the tunica vaginalis is opened. The testis and epididymis are protruded from the tunica vaginalis, and multiple punctures are made in the epididymis with a tenotome. If pus escapes from any of the punctures, the opening is extended and the cavity washed out with a solution of perchloride of mercury, 1–1000. The testicle is replaced, the tunica vaginalis washed with mercurial solution, a small gauze drain introduced, and the wound is closed. Relief of pain was obtained whether pus was found or not.

Belfield,[12] of Chicago, in an article on pus tubes in the male, discusses *Infections of the Seminal Vesicles and Vasa Deferentia.* He does not consider that extensive perineal operations like that of Dittel are advisable in suppurative conditions of the seminal vesicles, except perhaps in cases of perivesiculitis, "since the relief sometimes demanded by pyovesiculosis is furnished far more simply and safely by incision with a cautery knife from the rectum." "A much simpler and more effectual medication of the seminal tube and vesicle is secured by the operation that I have devised and practised, which can be done in the office. It consists essentially in opening the vas, stitching the cut edges to the skin, and injecting through a curved hypodermic needle any chosen solution into the proximal vas ; this liquid traverses the vas and ampulla and enters the seminal vesicle. By digital massage from the rectum, the injected liquid can be expressed from the urethra if desired. Through the fistula, daily injections of the vesicle can be made so long as seems necessary, after which the fistula is easily closed. Complete transverse section of the vas can safely be made, if preferred, since anastomosis of the cut ends and restoration of the lumen is easily accomplished. For injections through the vas, the solutions commonly employed in the urethra are used ; but the first injection should not exceed 30 to 60 min , lest spermatic colic and retention of urine be provoked."

Gonorrhœal Rheumatism.—Professor Albert Robin[13] considers the disease suitable for medical treatment alone, and rejects the recommendation of arthrotomy at an early stage. The cases vary, and no hard and fast rule can be laid down for treatment. Robin recommends the use of **Salicylate of Soda** in cases where several joints are affected, because of its analgesic effects. The urethral discharge should, according to Robin, be allowed to go on and cure itself. He quotes a case in which gonorrhœal conjunctivitis was present, and which he treated by an old remedy :—

℞ Cupri Sulph. gr. iss | Aq. dest. ad ℥j
Tinct. Opii ♏x |
M. Ft. collyrium. One drop to be instilled twice a day over the lachrymal caruncle.

In addition the eyes were washed twice a day with **Boric Acid Lotion.** In another patient with pyelitis and cystitis he gave decoction of

Fir-buds and **Urotropin** in 7½ gr. doses thrice daily. The latter may be increased to 12½ gr. if the stomach tolerates the drug. In cases where the pyelitis does not yield to this treatment, he uses another old remedy, the **Oil of Haarlem**—a mixture of essence of juniper berries and oil of bays, giving 10 to 15 drops emulsified in syrup of Canada balsam or in decoction of soap bark. As a last resort, **Turpentine** and **Camphor** should be given in pills :—

℞	Terebinth. Venetæ	ʒiiss	Ext. Opii	gr. iv
	Camphoræ	ʒiss	Ext. Aconiti	gr. iiss

M. Ft. pil. lx. Two to six to be taken in the 24 hours.

The joint affected is immobilized by a light, well-padded splint, and local remedies applied :—

℞	Acid. Salicylici	ʒiiss	Adipis	℥iiss
	Ess. Terebinth.	ʒiij	Lanolini	℥iiss

If this does not succeed, he applies compresses of **Van Swieten's Fluid** (corrosive sublimate 1 part, alcohol 100 parts, water 899 parts). As soon as the pain has subsided, light massage and gentle passive movements are begun. He does not recommend Bier's method. Good results have been obtained by the subcutaneous injection of **Colloidal Palladium** in ·01 to ·03 mgram per cc. **Collargol** has been satisfactory as an ointment. For ankylosis and muscular atrophy **Massage** is employed. **Electricity** may be used in continuous currents of high intensity applied quickly to the joint, or, better, faradic currents of low intensity acting on different groups of muscles. **Counter-irritation** by tincture of iodine, and small, superficial cauterizations, frequently repeated, is useful. The "turpentine bath" is very good, as are also hot baths, hot sand-baths (70° C., rising by degrees to 80°), and local applications of hot air (Tallermann's method). The general condition of the patient must not be overlooked. As soon as the discharge is completely cured, the administration of iron must be commenced (syr. ferri cit. ½ oz. thrice a day after meals). After ten days this must be alternated with

℞	Sod. Arsenat.	gr. ⅕	Aq. dest.	℥x
	Potass. Iodid.	gr. lxxv		

One tablespoonful in the early morning and one before the mid-day meal for ten days.

Gonorrhœal Arthritis.—R. I. Cole and J. C. Meakins[14] have published an instructive article on the treatment of gonorrhœal arthritis by **Vaccines,** and deal with fifteen cases treated in this manner. The technique employed in the estimation of the opsonic index in the series of cases was as nearly as possible that described by Wright. It has been held by some writers that certain strains of the organism are endowed with special powers in the production of opsonic immunity. The experience of these observers was, however, contrary to this. They used vaccines prepared from four different strains of gonococcus. "In comparing the results obtained no distinct difference could be demonstrated in the clinical results or effects on the opsonic index when the patient was vaccinated with vaccine made of his or her own organism or when a different vaccine was used." The strength of each vaccine was usually 600 million to one cubic centimetre. In carrying out the treatment, the opsonic index was first determined, and if below normal the first dose of vaccine was given. This was usually 300 million gonococci. The following vaccinations increased gradually in amount until 1000 million at one dose were used. No ill-effects were observed even when 1200 million gonococci were administered at one dose. A slight local reaction always occurred twelve to twenty-four hours after the first dose. This consisted of slight pain, tenderness, and redness at the site of injection. In only one case was this reaction at all marked. This patient suffered for forty-eight to seventy-two hours after the injection with marked pain and induration. This occurred after subsequent injections, but the reaction diminished in severity with each subsequent dose. After the last injection no reaction occurred.

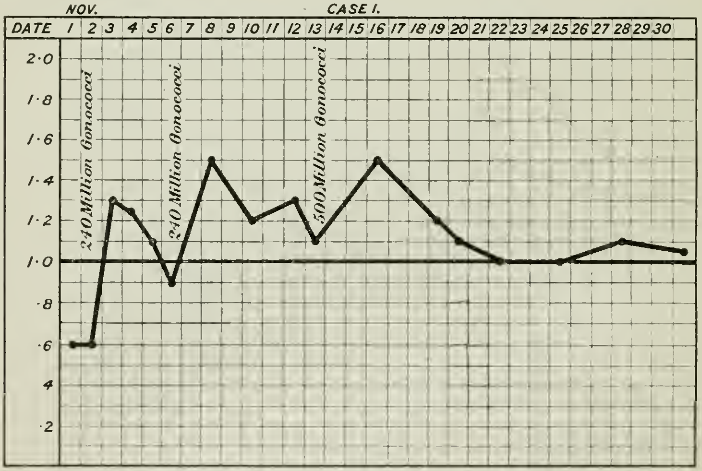


Fig. 36.

Chart of Variations in Opsonic Index in a case of Gonorrhœal Arthritis treated by Vaccines.

General constitutional disturbances following the injections occurred in only one case. Here there was a sharp rise of temperature, with general malaise, the evening after the second injection. Recovery from this was complete within forty-eight hours, and no further general disturbance was noted with the subsequent treatment. The change in the opsonic index after the treatment varied greatly in individual cases. As a rule there was a sudden ascent after the reaction with gradual descent.

The number of vaccinations employed varied according to the severity and chronicity of the cases. The smallest number was one and the largest eight. The intervals between the injections were controlled by the opsonic index. In most cases they amounted to from seven to ten days. The "negative phase" was not marked in any of the cases.

The following is a table of the cases, which are fully set out in the article :—

No.	Name	Age	Sex	Duration of illness before vaccination	No. of vaccinations	Average interval	No. of days under treatment	No. of days before returning to work	Range of opsonic index
						Days	*Days*	*Days*	
1	W. J.	25	Male	8 weeks	3	6	18	18	0·05 to 1·45
2	J. O.	40	,,	7 ,,	3	7	17	21	0·6 ,, 1·55
3	F. J.	26	Female	8 ,,	4	8	23	23	0·2 ,, 1·6
4	M. S.	20	,,	2 ,,	5	8	36	..	0·7 ,, 1·6
5	D. G.	26	Male	18 months	8	9	70	30	0·5 ,, 1·7
6	S. W.	46	Female	31 days	3	9	21	21	0·5 ,, 1·9
7	H. R.	30	Male	11 weeks	4	10	29	29	0·6 ,, 1·95
8	G. S.	19	,,	8 ,,	3	9	12	20	0·5 ,, 1·65
9	C. A.	36	,,	17 days	1	..	9	9	0·6 ,, 1·8
10	O. K.	28	,,	7 weeks	4	10	30	..	0·4 ,, 2·0
11	N. B.	35	,,	9 ,,	4	12	37	37	0·6 ,, 1·6
12	C. B.	35	,,	4 ,,	5	12	48	..	0·7 ,, 1·6
13	D. M.	41	,,	8 ,,	3	11	27	27	0·5 ,, 1·6
14	A. D.	32	Female	4 ,,	3	8	18	21	0·6 ,, 1·6
15	J. P.	41	Male	7 months	4	15	44	30	0·3 ,, 1·7

The authors sum up as follows:—"We realize that many cases of gonorrhœal arthritis recover completely under other forms of treatment, but it must be remembered that persisting ankylosis is not at all infrequent. The results in those cases which had been treated by other methods were quite marked. . . . The results in the chronic cases were more marked than those in the acute ones. . . . On the whole, our impression is that the vaccine treatment as carried out has been of distinct value, but it would require many more cases to make this conclusive. They have been sufficient, however, to justify us in continuing. Those who expect brilliant results or immediate cures following one or two doses of vaccine will be disappointed."

"As to the value of the opsonic index in diagnosis and as a guide to the administration of vaccines, we are more undecided. The estimation has been carried out with as careful technique as possible, counting, however, only fifty cells." "During the progress of the study, work carried on in this laboratory seems to show that very considerable fallacies exist in our present method of estimating the opsonic content of the blood; and while we are not yet able to say exactly what these limits of error are, they seem to be sufficient to render of little value even considerable variation in the index. In most cases the index has risen following the injection, though at varying intervals. But it must be borne in mind that as the injections were usually made when the index was low, in an irregular chart due to accidental causes the chances would be greater for the curve to go upward."

"Considering the present almost certain inaccuracy in opsonic technique, and the absence of sufficient evidence as to the rôle of opsonins in immunity, it hardly seems advisable that the control of the administration of vaccines by the estimation of the opsonic index should be persisted in. We do not feel that the danger of cumulative negative phases is a real one. In no case have we seen the administration of gonococcus vaccine do harm, and we feel that these cases offer sufficient justification for the treatment of gonorrhœal arthritis by means of vaccines in doses of 500 to 1000 millions administered every seven to ten days. Statistics from a large number of cases treated in this way will, however, furnish evidence for or against its value."

Torrey[15] describes the use of an **Antigonococcal Serum** in the treatment of gonorrhœal rheumatism. The serum was obtained in the following manner. The discharge of a fresh untreated case of gonorrhœal urethritis was cultivated in ascitic fluid and bouillon. After four to six days the pure culture was injected into the peritoneal cavity of a large rabbit in doses of 10 cc. to 60 cc. The blood taken from the carotid formed the serum. The use of this serum caused the disappearance of pain in the joints in twenty-four hours. The author holds that the serum had bactericidal powers.

REFERENCES.—[1]*Münch. med. Woch.* No. 48, Nov. 27, 1906; [2]*Mitteil. d. Deut. Gesellsch. z. Bekämpf. d. Geschlechtskrankh.* 1903, Bd. i. s. 18; [3]*Centr. f. Gyn.* 1905, No. 48, s. 1475; [4]*Mitteil. d. Deut. Gesellsch. z. Bekämpf. d. Geschlechtskrankh.* 1903, Bd. i. s. 14, 15; [5]*Med. Rec.* April 27, 1907; [6]*Berl. klin. Woch.* Sept. 17, 1906; [7]*Ibid.* June 24, 1907; [8]*Ther. Gaz.* Nov. 15, 1906; [9]*Med. Rec.* Dec. 22, 1906; [10]*Amer. Jour. Urol.* May, 1906; [11]*Med. Rec.* Oct. 13, 1906; [12]*Ibid.* May 4, 1907; [13]*Rev. Thérap. Méd.-Chir.* Dec. 1 and 15, 1906, in *Pract.* April, 1907; [14]*Johns Hop. Hosp. Bull.* July, 1907; [15]*Jour. Amer. Med. Assoc.* Jan. 27, 1906.

GOUT.

(*Vol.* 1905, *p.* 311)—Treated by Falkenstein with **Hydrochloric Acid**, ♏xl to lx daily in effervescing water, to be drunk at meal-times. **Morphine** relieves pain, and causes sweating. **Aspirin** is also of value. (*Vol.* 1898, *p.* 257)—Murrell recommends, for the acute attacks, a local application, consisting of Potassium Iodide, ℥ss; Sp. Vini Rect., ℥x; Linim. Saponis, ℥j: Ol. Cajuputi, ʒss; Ol. Caryoph., ʒss. This, with ʒj doses of **Colchicum Wine**, induces a very rapid cure, and allows the patient to return to work sooner than do less drastic modes of treatment.

GROWING PAINS.

In children between 6 and 14 these are probably rheumatic; therefore, examine the heart, and look for nodules, and enquire for a history of chorea, tonsillitis, and other rheumatic phenomena. In the severer cases with pyrexia, malaise, and furred tongue, enjoin rest in bed, and prescribe (for a child of 12) Sodii Salicyl., gr. x Sodii Bicarb. et Sodii Sulphat., āā gr. xv; Syr. Aurantii, ʒj; Aquam, ad ℥ss; every four or six hours, reducing first frequency, then amount, as the attack passes off. For slighter cases give **Calomel**, gr. ij, and order a liniment, consisting of **Oil of Wintergreen**, 10 to 20 per cent, in Olive Oil: to be applied thrice daily to the painful parts.

HABIT SPASM.

Search for some focus of irritation (dental caries, adenoids, errors of refraction, etc.) and correct anything amiss of this type. Pay especial attention to the mental health by stopping school over-work, excessive excitement of any kind, and teaching the friends to steer between scolding and sympathy. Treat the general health by some such tonic as Ol. Morrh. c. Maltina et Syr. Ferri Phosph. Co., āā ʒij, twice daily after food; or by a long holiday in the country. **Exercises** of the affected muscles may establish voluntary control.

HÆMATOMA OF AURICLE.

(*Vol.* 1896, *p.* 258)—Apply **Goulard's Lotion** frequently at first: then practise **Massage**, after lubrication, for 15 minues dtaily. Maintain the shape of the auricle by cotton wool and gauze compresses, firmly bandaged and only removed for the massage. If the distention is very great, make an aseptic incision.

HÆMATURIA.

(*Vol.* 1902, *p.* 303)—Hæmaturia of a severe type, associated with recurrent nephritis, has been checked by the injection of **Gelatin**, 25 cc. of a 2 per cent solution in normal saline, beneath each clavicle, on two successive days. It was also given by the mouth in a 10 per cent solution, ½ litre per diem for a week.

HÆMOPHILIA.

J. G. Emanuel, B.Sc., M.D.

Emile-Weil[1] recognizes two distinct forms of this disease—sporadic and hereditary. He finds that in the sporadic form the blood is very fluid, and flows rapidly and for a long time from a puncture, coagulation time is lengthened, but the clot is normal, and the serum abundant: injection of fresh serum, human or animal, renders coagulation normal and cures the disease, at all events for a time. In the hereditary form, on the other hand, the blood is viscous, and flows slowly from a puncture; there is a constant leucopenia, coagulation time is much lengthened, the clot is soft, the serum less abundant, injection of fresh serum has little effect, but calcium chloride hastens coagulation.

Torrance Hugh[2] reports a severe case of hæmophilia in which various remedies had been tried in vain, in order to arrest the hæmorrhage which followed an operation on the knee-joint; the administration of thyroid extract in 5-gr. doses three times a day, however, produced excellent results.

REFERENCES.—[1]*Gaz. d. Hôp.* Nov. 5, 1906; [2]*Ann. Surg.* May, 1907.

HÆMORRHAGE IN INFANTS. (*See* NEW-BORN, DISEASES OF.)

HÆMORRHAGE FROM STOMACH AND INTESTINE.

Robt. Hutchison, M.D.

Tests for Occult Bleeding.—Cowie[1] reviews the tests that have been introduced for the detection of "occult" bleeding in the alimentary canal, and comes to the following conclusions:—

1. Individuals eating an ordinary meat diet seldom give a reaction in the stools with the occult blood tests. If a reaction occurs it is in all probability due to some pathological process in connection with the gastro-intestinal tract.
2. For a positive reaction to occur from the ingestion of uncooked meat, 10 grams must have been eaten: usually 20 grams.
3. For a reaction to occur in the stools after a hæmorrhage from the œsophagus or stomach, the hæmorrhage must have amounted to at least 0·5 gram. With such a hæmorrhage only a faint reaction is obtained. With 1 gram of blood a decided reaction occurs.

4. The reaction always occurs in the first stool passed after the ingestion of pure blood or of food containing free blood. It seldom occurs in the second stool. It may occur as early as ten, and as late as twenty-one, hours after ingestion.

5. The sensitiveness of the guaiac reaction is greatly enhanced if an equal amount of water is added to the ether extract employed, before the addition of the guaiac and turpentine.

6. The diversity of results obtained by various writers and himself leads to the conclusion that when very minute amounts of blood are present, a great variety of results will be obtained by all tests, with the same amount of blood, if experiments are made on successive days.

7. The water modification is uniformly more sensitive than the Weber, Boas, or Klunge tests. All of the guaiac tests are more sensitive than the aloin test.

8. A gradually appearing and fading colour is the crucial test of a positive reaction. Any colour, from a pale green to deep violet, that develops and fades, is positive.

This author carries out the test as follows :—

1. All glassware must be chemically clean and perfectly dry.

2. To 1 gram of stool, which has been softened if necessary by as few drops of water as possible, about 4 or 5 cc. of glacial acetic acid is added and intimately mixed. This is best accomplished by rubbing up in a glass mortar.

3. To the above mixture add 30 cc. of ether, and allow to extract for several minutes, after thoroughly shaking or mixing.

4. To 1 or 2 cc. of the extract, which is perfectly clear and can be decanted off, add an equal amount of distilled water and shake thoroughly.

5. To the resulting mixture add a few granules of powdered guaiac resin, an amount that will be held on the tip of a small knife-blade ; this is allowed to dissolve, and the tube is agitated thoroughly.

6. Thirty drops of old water-white chemically pure turpentine are now added, and thoroughly mixed with the contents of the tube. Set aside against the light or in front of a white surface.

If blood is present to the amount of 1 mgram to 1 gram of stool a distinct light-blue colour develops quickly in the upper half of the mixture, remains for a short time, and gradually disappears. Larger amounts of blood cause a more intense blue, but almost always a turbid, or opaque blue, often the colour of a turquoise.

Leech[2] gives a very careful summary of the literature of the whole subject, and compares the relative value of the different tests. He prefers the benzidin method, and performs the test, which can be done in five minutes, in the following manner : A portion of the stool, about the size of a hazel-nut, is broken up with about 2 cc. of water in a mortar. This is placed in a test-tube. Half its volume of glacial acetic acid is added, and the whole is thoroughly shaken. The test-tube is then nearly filled with ether, closed with a rubber stopper, and carefully reversed twenty or thirty times. In this way hæmatin acetate is extracted and an emulsion avoided. To about one inch of this resulting translucent yellow ethereal solution are added: (1) A few drops of glacial acetic acid; (2) One inch of solution of benzidin in rectified spirit; (3) One inch of liquor hydrogenii peroxidi. The mixture is shaken, and a few drops poured on to a white porcelain slab. Blood, even in minute quantities, causes a blue colour to appear.

He believes that the test is of great value, but reliance must not be placed on one experiment alone. The presence of blood is not of itself diagnostic of any single disease. It is when considered with other symptoms that it becomes of value. Its chief use is in the diagnosis of carcinoma of the stomach. Here the presence of blood is almost constant, but it is uncertain how early it appears. Cirrhosis of the liver is the disease most likely to cause confusion. In carcinoma of the intestine, and in all forms of ulceration, hæmorrhage is irregular in its appearance.

Einhorn[3] uses benzidin papers prepared by moistening filter-paper with a saturated solution of benzidin and glacial acetic acid, and then drying. A piece of such paper is immersed in the solution to be examined, and a few drops of peroxide of hydrogen added. The paper is then placed on a piece of white porcelain and examined for a blue colour. The test is very sensitive, and may be used in the examination of gastric contents, urine, or fæces, a piece of the latter the size of a pea being rubbed up with 2 cc. of water, and the paper immersed in the solution.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* Mar. 1907; [2]*Med. Chron.* Aug. 1907; [3]*Med. Rec.* June 8, 1907.

HÆMORRHAGE, UTERINE. (*See* LABOUR.)

HÆMORRHOIDS.

Sir Charles Ball, M.Ch., F.R.C.S.

Treatment by Injection.—Vulliet[1] describes a method which has been practised for several years by Prof. Roux with marked success. The advantages claimed for the method are freedom from hæmorrhage, the short time the patient is confined to bed, and the simplicity of the instruments: a stout hypodermic syringe and a 60 per cent solution of **Carbolic Acid in Glycerin** is all that is necessary. With the patient under an anæsthetic, the piles are made to protrude in the ordinary way; the needle is introduced into the base of each pile in turn, and one or two drops of the solution injected, care being taken that none of the solution reaches the surface of the piles. It is better to keep the bowel continuously douched to prevent this occurring. Immediately after the operation the piles become swollen. They are left protruding from the bowel, well smeared with vaselin. For a few hours this swelling continues, the piles becoming dark purple and even showing small areas of sloughing tissue, but in three days shrinking begins, which may be aided by hot applications. There is little pain, and the patient need only be confined to bed for five days. It is quite unnecessary to constipate the patient. For some weeks fibrous nodules remain about the anus, but these gradually disappear and cause no trouble. While the immediate results are rapid, relapses have seldom been known to occur.

Bochard[2] describes Franck's method of treatment by injection. He uses 50 per cent solution of **Carbolic Acid in Alcohol**; each pile is caught temporarily in the wire noose of a polypus snare, and the solution injected with a Pravaz syringe; in five or ten minutes the pile swells and becomes hard, and in seven or eight days becomes absorbed. He uses Schleich solution or stovaine as an anæsthetic.

C. B. Kelsey,[3] however, describes a case of severe hæmorrhage from the rectum which nearly proved fatal in a man who had his piles injected, the last time two weeks previous to the bleeding. Examination revealed a complete fistula on one side of the rectum, where an injection had burrowed its way out, and a deep ragged ulcer in another part, where a slough had occurred as a result of another injection and from which the bleeding had come. Kelsey also states he has seen in other cases painful swelling and œdema lasting for weeks, abscess and fistula, deep pelvic phlegmon with lymphangitis, severe ulceration, and death from septic poisoning follow the operation of injection for piles.

Treatment by Operation.—Barker,[4] in a clinical lecture, strongly condemns operation on piles while in a state of inflammation, and advocates **Bathing** with 1–1000 **Bichloride of Mercury** solution. When the inflammation subsides the necessity for operation will frequently have disappeared. Should this not be the case, he advocates the removal of single piles by vertical elliptical incision round the base through the mucous membrane only, ligaturing the neck, and snipping off the pile, the mucous edges then being sutured together over the stump. For multiple piles he is a strong advocate for Whitehead's operation.

Ball,[5] in a clinical lecture, in dealing with the operative treatment of internal piles, says, "The conditions essential to satisfactory operation and prevention of unpleasant sequelæ are (1) Complete removal of implicated mucous membrane with subjacent pile structure; (2) Accurate hæmostasis; (3) Avoidance of injury to the muscular coat of the rectum or external sphincter muscle; (4) While removal of redundancy is necessary, great care must be taken to preserve as nearly as possible a normal amount of the cuticular covering of the anal canal. I am satisfied that these conditions can best be fulfilled by the removal of each pile separately by an operation which combines some of the details of excision, crushing, and ligature in the one operation. For the past seven years I have adopted this combination almost exclusively.

"*Method of Operating.*—The patient, having been anæsthetized to full relaxation of voluntary muscles, is placed in the lithotomy position, and the anus thoroughly dilated by the introduction of the two index fingers or thumbs, by means of which a strain is kept up upon the sphincters until complete relaxation has taken place; this should be done carefully, so as to avoid extensive laceration. The piles now

SIR CHARLES BALL'S OPERATION FOR PILES.

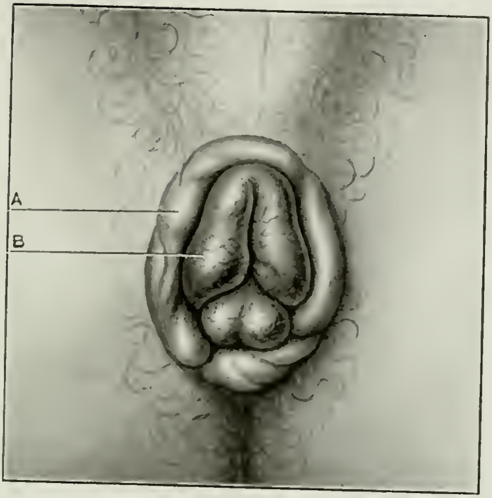


Fig. A.

Showing external ring **A** formed by revoluted cutaneous anal canal. Internal ring **B** of internal piles covered by mucous membrane.

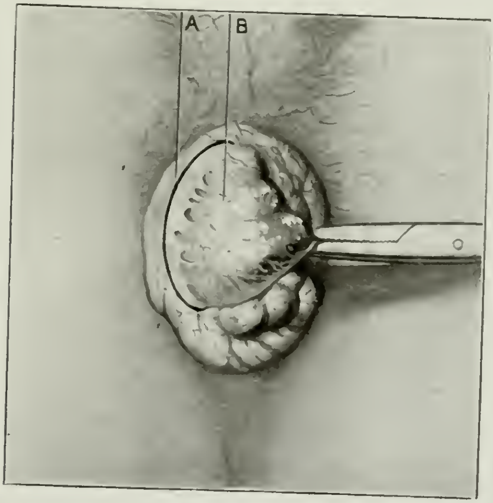


Fig. B.

Line of incision. **A** and **B** as in *Fig. A*

PLATE XX.

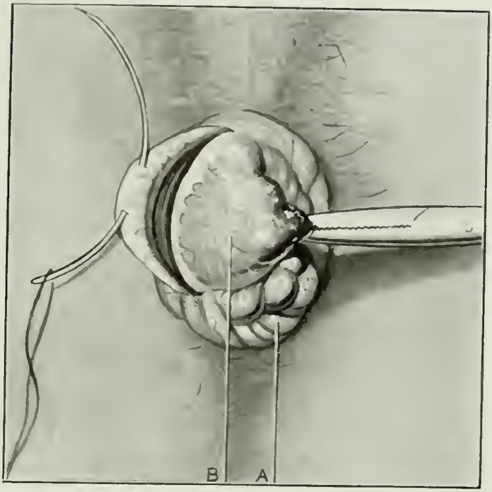


Fig. C.

Passing subcuticular ligature. The fibres of the sphincter muscle are seen deep in the wound.

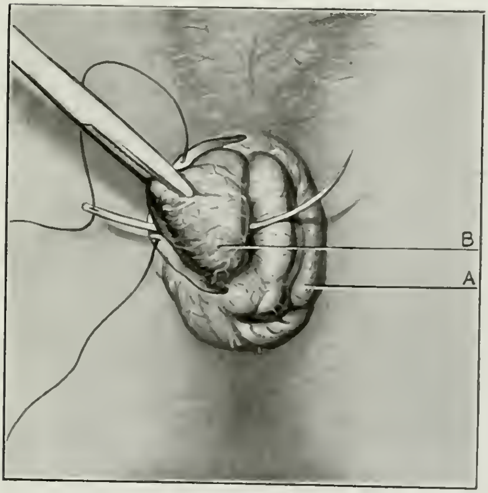


Fig. D.

Passing ligature through base of pile.

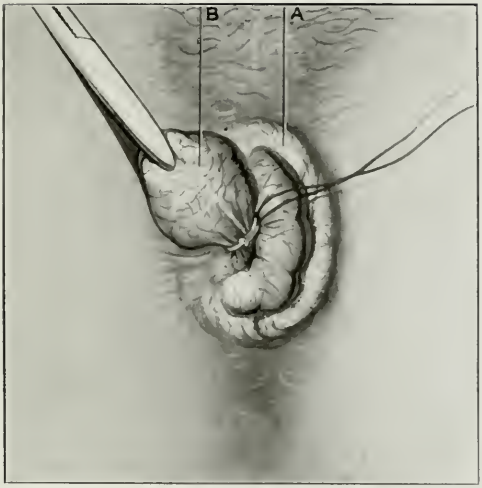


Fig. E.
Base of pile ligatured.

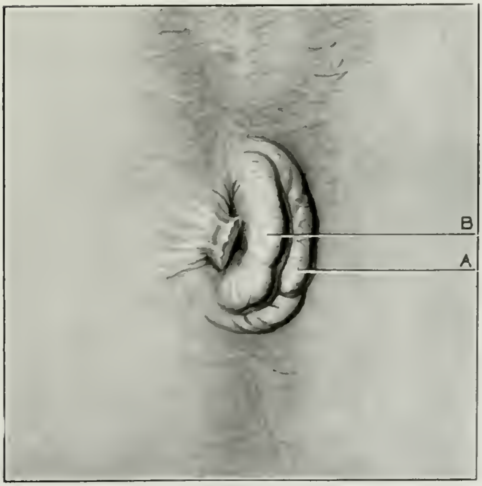


Fig. F.
Appearance after ligatured pile has been cut away.

become prolapsed, and generally more tumid, owing to extravasation of blood into the submucosa, the result of the stretching. An exact estimate is now to be made of the amount of tissue necessary to remove, and a hæmostatic catch forceps applied to each pile or piece of spongy mucous membrane requiring removal; usually four or five pairs of forceps are thus applied, and allowed to hang down in a cluster; in this way there is no danger, when the parts afterwards become obscured by blood, of any of the smaller piles being overlooked or forgotten. Taking up one of the catch forceps, by gentle traction the whole of the enclosed pile is made prominent, and its lateral attachments to the anal canal separated by snipping through with a scissors. Much of the success of the operation depends upon how this dissection is carried out. Prolapsed internal piles are surrounded by a ring formed by revolution of the lower zone of the anal canal, and between this and the piles proper there is found an irregular line which corresponds to the pectinate line or muco-cutaneous junction. If the dissection of the lateral connections of the piles is commenced at the pectinate line, as is commonly recommended, following the original description of Mr. Salmon, it will be found that although the revolution of the lower anal canal can be reduced, at the completion of the operation, it is apt to recur the first time the bowels move, and become permanent in the shape of cutaneous tags (external piles), which give a good deal of annoyance, and sometimes require a further operation for their removal. If, on the contrary, the dissection is commenced at the outer edge of this cutaneous ring, too much tissue will be removed, and possibly an anal stricture will result, or, when healing has taken place, it will be found that a portion of mucous membrane has become permanently everted, which is a great discomfort to the patient from the moist mucous secretion which constantly soils the parts. It is obvious, therefore, that the proper position to commence the dissection is between these two lines; the best results are to be obtained by making a curved incision corresponding to the base of the pile being dealt with, taking care that the greatest convexity of the curve does not involve more than one-third of the cutaneous ring (*Plate XIX, Fig. B*), while the ends of the curved incision terminate in the mucous membrane at each side of the pile. By blunt dissection the pile is now separated from the external sphincter muscle, which is usually clearly visible, and must on no account be injured. The dissection is carried up the anal canal until the pile remains attached above only by healthy mucous membrane with the vessels coming down into it; this mucous membrane is now crushed in a powerful clamp. I prefer one with parallel closing blades; the line of incision is now carefully searched, and if any arteries are seen to be bleeding, they can be twisted. A curved needle armed with strong silk is now passed through the subcutaneous tissue at a point corresponding to the greatest convexity of the incision (*Plate XX, Fig. C*), and is next passed through the centre of the crushed mucous membrane forming the pedicle of the pile (*Plate XX, Fig. D*); this ligature is tied first very tightly on one side, thus strangulating one-half of the already crushed pedicle, and the ends are then passed round and tied equally tightly on the other side, constricting the entire pedicle and including the half already tied (*Plate XXI, Fig. E*). The effect of this ligature is to control the larger blood-vessels going into the pile, while at the same time, owing to its having a subcutaneous hold on the revoluted skin of the anal canal, it returns this into place and maintains it in position until union has taken place (*Plate XXI, Fig. F*). The use of the crushing clamp is of importance in allowing more accurate application of the ligature and more certain hæmostasis. The pile is now to be cut away in front of the ligature, but not close enough to endanger slipping, and the remaining piles to which catch forceps were attached at the commencement of the operation are treated similarly. In the illustrations of this method, for the sake of clearness, the treatment of only a single pile is indicated, but it is understood that all are to be dealt with in like manner."

Congenital Piles.—Under this head F. V. Milward[6] describes three cases in which he had seen, in young infants, small swellings about the size of a pea in the middle line at the anterior margin of the anus. When snipped away they were found to be composed of fibro-fatty tissue. He considers them to be a congenital malformation, rather than out-growths originating in a dilated vein.

Deeply-seated Hæmorrhoids causing Blood in the Stools.—Goldmann[7] reports the case of a man who had repeated bleedings from the bowel for five years, for which he had been treated to no purpose. He was extremely anæmic, and blood was found intimately mingled with his stools. The anus was entirely normal, but by means of a proctoscope there was found, four inches from the anal opening and on the anterior wall of the ampulla, a mass of dilated veins presenting much the appearance of a polyp. This was surrounded by a catarrhal area. Cauterization through the proctoscope accomplished immediate cure. The characteristic feature of the bleeding from high-seated hæmorrhoids is the fact that it is moderate but constantly recurring, and therefore produces a profoundly anæmic condition. The blood is so intimately mixed with the stools that it is not recognized as blood. Schreiber has found varicosities eight inches from the anus, and notes that in 10 per cent of his cases examined by the proctoscope there is some venous dilatation, this often happening in the absence of the common external and internal hæmorrhoids. The treatment of this condition is comparatively simple, since the galvano-cautery can readily be applied through the proctoscopic tube. The findings of Schreiber suggest the advisability of a careful rectal examination and an analysis of the stools for occult blood in cases of anæmia which are not readily accounted for.

REFERENCES.—[1]*Rev. Méd. de la Suisse Romand*, in *Med. Press*, May 9, 1907; [2]*Deut. med. Woch.* in *Zeit. f. Chir.* May 18, 1907; [3]*Med. Rec.* Aug. 3, 1907; [4]*Lancet*, June 22, 1907; [5]*Med. Press*, Oct. 10, 1906; [6]*Lancet*, June 1, 1907; [7]*Centr. f. Chir.* in *Ther. Gaz.* Sept. 15, 1906.

HALLOPEAU'S DISEASE. (See PYODERMATITIS VEGETANS.)

HAY FEVER.

(*Vol.* 1902, *p.* 310)—**Suprarenal Extract** is recommended, either internally in the form of tablets, or as a local application to the nasal mucosa in the form of a spray or on cotton pledgets, a 6 to 12 per cent solution being used. (*Vol.* 1899, *p.* 307)—Another solution for the atomizer is: ℞ Acidi Borici, gr. xx; Menthol, gr. iv; Glycothymolin, ʒij; Eucaine (4 per cent solution) ad ℥ij. Or, ℞ Cocainæ Hydrochloridi, gr. iij; Thymol, gr. iij; Bismuthi Subcarb., ʒij; Vaselini, ℥j. The ointment to be applied by means of wool tampons. (*Vol.* 1901, *p.* 140)—Or, ℞ Menthol, gr. xlv; Resorcini, gr. xlv; Alcohol ℥iv: to be applied, diluted with water, every four hours.

HEADACHE.

(*Vol.* 1900, *p.* 245)—For children with headache and anæmia following an acute infection: ℞ Ferri et Ammonii Citratis, gr. v: Liq. Arsenicalis, ♏v; Syr. Zingiberis, ʒss; Inf. Calumbæ, ad ℥ss, after meals (or half the dose may be used). For the headache accompanying chronic interstitial nephritis: ℞ Potass. Citratis, ʒij; Tinct. Hyoscyami, ʒij; Spt. Ætheris Nitrosi, ʒij; Inf. Scoparii, ʒvj. ℥ss thrice daily. (*Vol.* 1904, *p.* 418)—**Saline Aperients** are the best to use in the headache of constipation; for example, Sodii Sulphat. Efferv., ʒj to ʒij to be taken in half a tumblerful of water every morning on rising. Of analgesics, beside the ordinary coal-tar products, **Aspirin** in 10-gr. doses is often useful, also **Camphor Monobromide**, gr. iij–v, every three hours.

HEADACHE, NASAL. (*See* NOSE, DISEASES OF.)

HEART DISEASES.

Alfred H. Carter, M.D., F.R.C.P.

Stokes-Adams' Disease (*Heart-block*).—This interesting clinical condition, characterized by a slow radial pulse, brief syncopal, apoplectiform, or epileptiform attacks, and jugular pulsations in the neck occurring more frequently than the radial pulse, continues to receive much attention. There is now a strong body of evidence (both clinical and experimental) showing that it represents the results of impaired conductivity of contractile impulses from the auricles to the ventricles. These impulses travel along a definite connecting bundle of muscular fibres which passes from the inter-auricular septum downwards through the fibrous auriculo-ventricular ring, to divide the inter-ventricular septum into two branches, one for each ventricle, terminating in the ventricular walls and papillary muscles. Whether the conductivity in question is essentially muscular or nervous in its nature is at present undecided.

A discussion on this subject took place at the annual meeting of the British Medical Association last year,[1] in which Prof. Aschoff gave a minute account of the normal and morbid anatomy of the auriculo-ventricular connecting bundles. Dr. Mackenzie showed, by a series of simultaneous graphic tracings (*Fig.* 37) of the radial and jugular pulse, that the existence of delay or actual stoppage in conductivity could be demonstrated by observing the interval which separated the auricular and "carotid" waves in the jugular vein of the neck (*a–c* interval), and by contrasting the time of their occurrence with that of the radial pulse. The interference with conductivity may be partial or complete. Where partial, the length of the *a–c* interval is increased in direct proportion to the delay, but when complete, the *c* wave is suppressed, and the rhythm of the ventricle is dissociated from that of the auricle, each adopting an independent rhythm of its own, the ventricular being considerably slower than the auricular rhythm.

He related a case of recent rheumatic endocarditis in which he had observed a delay in the *a–c* interval. On the administration of digitalis, the conductivity of the connecting muscular bundle was still further depressed, so that several ventricular beats dropped out altogether, and the pulse became markedly irregular. Observations of this kind throw light upon the discordant results of digitalis in certain cases of endocarditis, according to the distribution of structural changes in the cardiac muscle. A similar increased depression of conductivity could be produced at the will of the same patient by the act of swallowing, which occasioned temporary irregularity of the heart's action, through the influence of the vagus nerve.

Prof. Erlanger related the results of experiments in mammals, showing that when the auriculo-ventricular bundle was exposed and subjected to compression, all degrees of delay in conductivity up to actual stoppage could be produced, according to the amount of compression, attended with the characteristic disturbance of cardiac action already described. He also showed that the incidence of inhibition of the heart-beat by stimulation of the vagus was mainly (if not exclusively) upon the auricles, the ventricular rate being scarcely affected. Such stimulation of the vagus nerve was also capable of converting simple delay of auriculo-ventricular conductivity into actual heart-block, an observation of special interest in connection with the effect of swallowing, in Mackenzie's case above noted. G. A. Gibson contributed an important case of Stokes-Adams' disease, with careful post-mortem examination, which supported the pathological teaching above referred to. Further cases were reported by Morrow.

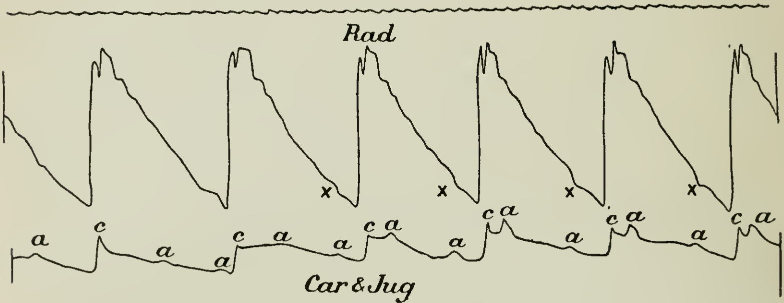


Fig. 37 shows complete Heart-block, the auricle (waves *a*) pursuing one rhythm, and the ventricle (radial and carotid waves) another and slower rhythm. Note at × a slight depression in the radial tracing due to the systole of the left auricle affecting the arterial column.

G. A. Gibson[2] and W. T. Ritchie give a good account of recent work in connection with heart-block, which is worth careful perusal. Gibson also contributes a preliminary note[3] on electromotive changes in heart-block.

Keith[4] reports a fatal case of gummatous infiltration of the auriculo-ventricular bundle. The superior vena cava was completely destroyed ; the coronary sinus was involved in a cicatrix ; the sinus of the left auricle formed a cicatricial ring ; the inter-auricular and part of the interventricular septum formed a cicatricial lamina ; the commencement and upper half of the main auriculo-ventricular bundle were completely destroyed ; and the coronary arteries were partially occluded. Yet with the complete separation of the musculature of the auricles and ventricles there had been only passing syncopal attacks some thirteen years before, which was probably the date at which the auriculo-ventricular bundle was first invaded by the infiltration ; there were no signs of heart failure, and there were no urgent symptoms of insufficiency of the heart's action.

The lesson to be drawn from the case appears to be that the normal mechanism of the heart may be profoundly changed without a great disturbance of function, provided that these changes are not brought about too suddenly. The recovery which followed the initial syncopal attacks was probably due to the auriculo-ventricular system persisting beyond the point of lesion and taking on an automatic power of originating ventricular contraction.

A further case of Stokes-Adams' disease is recorded by Hay and Moore,[5] exhibiting syncopal and convulsive seizures. These seizures were of all grades of severity, and tended to occur in groups, with periods of comparative comfort intervening. The advent of seizures was usually indicated by definite prodromal symptoms. The necropsy revealed partial obliteration of the auriculo-ventricular bundle ; this would cause a persistent depression of conductivity. An analysis of numerous tracings revealed marked variations in conductivity, all grades from normal conduction to complete heart-block being in evidence at one or another time. This suggests influences in addition to the organic lesion. Such influences were probably nervous in character, and affected conductivity either directly through the vagus or indirectly by altering the auricular frequency.

An address by Alex. Morison,[6] on the "Nature and Treatment of Hypertrophy of the Heart," raises an interesting question as to how far we are justified in regarding such hypertrophy as always and necessarily beneficial. We have, of course, outgrown the time when cardiac hypertrophy was looked upon as a disease ; and, solely from the point of view of the circulatory mechanism, it is difficult to understand the possibility of hypertrophy being otherwise than salutary and helpful, representing as it does a natural effort towards the establishment of an equilibrium between obstacle and heart-power. Even if the obstacle were temporary in duration, and where hypertrophy previously acquired might be no longer needed, all analogy would lead us to expect that it would disappear as the need ceased. But this is taking too narrow a view of the situation, and cardiac enlargement beyond a certain point may quite intelligibly be brought within the category of mediastinal tumours giving rise to important secondary disturbing effects, resulting, directly or indirectly, from serious encroachment upon the thoracic cavity. The same problem is touched upon from another point of view in our paragraphs on adherent pericardium, *infra*. It is a matter which claims careful attention.

Pulse and Blood-pressure.—Lewis,[7] as the result of a careful study on the interpretation of sphygmographic tracings, and the factors involved in the production of anacrotism, arrives at the following conclusions :—

1. Pulse tracings, taken with the Dudgeon's sphygmograph, show disproportion in the ordinate lines. The systolic phases of the waves are exaggerated when compared with the diastolic phases. If several varying tracings are taken from the same pulse, the safest criterion to follow, in choosing a tracing, is the relative excursion of the diastolic phases.

2. Compression tracings are of value, inasmuch as they prolong the diastolic phases of a beat, and allow an easier and more certain investigation of the rapidity of the outflow of the blood. They also provide a clinical method of testing the diastolic pressure of a pulse, and are particularly valuable in cases of aortic regurgitation.

3. Several methods of producing anacrotism locally are described. It is probable that the majority of anacrotic pulses and flat-topped pulses have common factors of origin. The flat-topped pulse is a later stage of the anacrotic. Anacrotism is produced locally, by a loss of the normal relationship between the pressures of the wave entering a vessel, and the resistances encountered in that vessel. General anacrotism depends on the same cause ; in this case there is a special consideration, for the wave may be anacrotic from the start, and conditions of the vessel wall, or an obstruction in front, may aid in its conduction as an anacrotic wave.

In a lecture on the utility of the sphygmomanometer, Batty Shaw[8] refers to its value in distinguishing secondary from primary cardiac disturbance, and in affording an explanation of symptoms which are otherwise a source of difficulty. He specially mentions the following groups of cases : (1) *A pulmonary group.* These cases include a number in whom the chief complaints were the following : cough, "tightness of the chest," and shortness of breath, either constant, on exertion, or in attacks, occurring more particularly at night, i.e., when recumbency is assumed ; (2) *A cardiac group.* Amongst the symptoms complained of are palpitation, pain over the heart, night starts, orthopnœa, etc. Some have complained of the well-known symptom of inability to walk vigorously against a head wind ; (3) *A cerebral group.* This group includes a number of cases in whom the chief complaint has been headache, giddiness, languor, general weakness, "noises in the head" ; in one case the patient had become unconscious, and was hemiplegic for ten weeks, ultimately recovering to such an extent that there is now little or no sign left of this complication ; two others have been suddenly seized with fainting attacks, in which they lost consciousness for ten to fifteen minutes, ultimately recovering much as if they had had epileptic seizures; (4) *A gastric group.* Another group is drawn from a source familiar to all workers in out-patient departments, and includes the patients who are afflicted with dyspepsia, marked pain, distension, flatulence, and sickness or nausea. High and apparently continuously high blood-pressure was common to all these cases, and provided the most hopeful clue to successful treatment.

Blood-pressure in Heart Disease.—Starling,[9] in an article on this subject, points out that the blood-pressure in heart disease ordinarily so called is in no case below normal, and divides all cases into one of two groups, according as the pressure is normal (100 to 125 mm. Hg) or above normal (130 to 280 mm. Hg). He reports several cases, and after discussing their etiology, draws attention to the great importance of a reading of arterial pressure in all cases in which we have to treat the cause of failing heart. It usually enables us, he says, "at once to relegate the case to one of the above classes. In the first class it is the heart muscle to which we have to direct the whole of our attention. If we bleed, it is to relieve temporarily the distended right heart. If we give oxygen, it is to improve the nutrition of the heart and to relieve it in cases of mal-oxygenation by relaxation of arterial spasm. If we give digitalis, it is for its steadying and anabolic effects on the heart muscle. On the other hand, in the second class, our first thought must be the reduction of the high pressure which has worn down the working power of the heart muscle. Bleeding in such cases would not only give a temporary relief to the heart: it would also, by affording a stimulus to building up of the tissue, enable the organism to apply its nitrogenous waste products to this purpose, and so tend to the purification of the circulating fluid. On the assumption that there is a plethora in the widest sense of the term, and that it is primarily due to an excess of income over expenditure, the treatment which would seem to be indicated would run on the old-fashioned lines of **Bleeding** and **Purging.** At the same time there must be a complete reformation of mode of life. The income must be diminished by limitation of food; the output must be increased where necessary by regulated exercise. It is probably in cases such as these that **Oertel's Methods** of treatment of heart disease have been most successful." Whether, however, limitation of fluids in the diet is desirable he is inclined to doubt. "Although increased fluids tend to the perpetuation of the plethora present in these cases, too rigid a restriction of fluid must seriously hinder the excretion of the hypothetic toxic substances which we have assumed to be the cause of the disorder."

Lewis[10] contributes a careful study of the pulse in aortic disease, but it is too full of detail for report in abstract. Geo. Oliver[11] writes instructively on the control of super-normal arterial pressure. As to **Diet,** he lays stress upon moderation in the quantity of food, and upon a small proportion of those constituents which stimulate the cardio-vascular apparatus, such as various salts, soluble extractives, active principles, and alcohol. He prefers boiled to roast or fried meats, and would exclude meat-soups and gravies. The relative proportion of vegetable foods should be increased. The best drink is soft, non-aerated water, or mild alkaline waters, and the best time for taking them is night and morning, or an hour before meals. Small quantities of diluted spirit may in some cases be allowed with advantage, but as a rule they are better avoided. **Common Salt** should be avoided, or taken only in strict moderation. As a substitute he recommends lithium benzoate 1 dr., or potassium benzoate 3 dr., potassium chloride 2 oz., sodium chloride 1 oz.—½ dr. at the meal. A milk or lacto-farinaceous diet, when it agrees, is often of great service ; but it is frequently badly borne, especially when the bowels are costive and the liver inactive. Cheese in moderation is perhaps the least objectionable form of proteid food. Tobacco smoking is undesirable. While rest is of the greatest value, there are cases in which reasonable exercise short of fatigue is beneficial. Of bathing, **Aix Douche Massage,** followed by the needle-bath of alternating temperatures, and a warm pack, is perhaps the most excellent method. The general effect of the **D'Arsonval Current** for twenty minutes daily is sometimes most beneficial, and the addition of bi-polar massage to this current, or the sparking application of it to the limbs and body, is now and then useful. The body should be warmly clothed, cold, windy climates should be avoided, and skin elimination should be encouraged by hot-air baths of some kind once or twice a week, followed by efficient massage. Medicinally, evacuant and antiseptic treatment is indicated, and **Saline Aperients**, with the occasional use of **Calomel**, are best for this purpose. Vasodilator remedies are not altogether satisfactory as a means of controlling persistent increase of blood-pressure. **Thyroid Extract** is undoubtedly useful in some cases, especially in subjects over forty-five or fifty years of age of a gouty or obese type, but it should not be employed in a routine fashion for the majority of cases. The depressor effects of **Potassium Salts**—carbonates or citrates—are often more striking than laboratory experiments would suggest, and may sometimes be combined advantageously with nitrates and nitrites of the same base. Alkalies are usually well borne for long periods. The association of **Ammonium Benzoate** or **Hippurate** with **Ammonium Bromide** is often of great service, and it is interesting to find how many remedies with a benzene nucleus are useful in gout as well as arterial high-tension. The therapeutic range of the nitrites and potassium iodide is well known and generally recognized. **Sparteine** has recently been suggested by Prof. Dixon for lowering arterial pressure.

Cases present great differences, however, in their response to treatment ; and as a rule the results are more satisfactory in proportion as circumstances permit free regulation of rest, exercise, and general habits of life, and where the increased pressure is moderate in amount (under, say, 160 mm. Hg). Finally, it should never be forgotten that super-normal blood-pressure is a secondary result of some pathological cause or causes, which may or may not be removable ; and again, that high pressure is sometimes a compensatory natural defence of the body, and absolutely necessary to insure the requisite speed of capillary circulation. It is only in the presence of untoward symptoms that preventive measures are called for.

Venous (Jugular) Pulsation.—Up to comparatively recent times, jugular pulsation was seldom considered apart from tricuspid regurgitation. Now we know that it occurs under conditions of normal health, and that some knowledge of its behaviour is essential, not only for right interpretation of abnormal types of pulsation, but for elucidation of the very difficult and obscure subject of arrhythmia. It must be understood that the investigation of jugular pulsation involves the skilful employment of apparatus, and special experience in the interpretation of results, which place it outside ordinary routine practice. At the same time, much information has been acquired which promises to be of considerable practical importance, and should be within the possession of all. The remarks which follow are mainly based upon papers by Mackenzie,[12] Morrow,[13] Gibson, and several others.

A jugular tracing varies under different circumstances, and for one reason or another is not always obtainable, but the cases in which it is really absent, especially in the recumbent posture, must be very few. For the purpose of bringing the details of a jugular tracing into chronologic relation with the events of the cardiac cycle, it is necessary to combine it with a simultaneous tracing of the apex-beat, or the radial pulse. The latter is generally preferred.

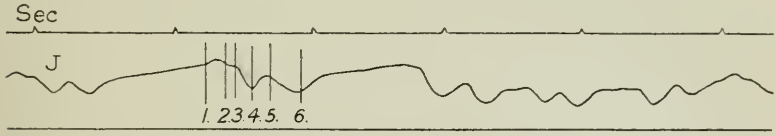


Fig. 38.—Tracing from Jugular Vein of Dog. Respiratory variations in pulse-rate may be observed. Time in seconds. 1. Commencement of auricular or presystolic wave. 2. Systolic wave. 3. Auricular collapse. 4. First onflow wave. 5. Ventricular collapse. 6. Second onflow wave.

By observations of this kind, under suitable and favourable conditions, six events may be identified in a tracing (*Fig.* 38) from the jugular of a dog under the influence of morphia and ether (Morrow).

1. A positive wave which is admitted by all as the result of auricular systole, and hence known as the "auricular wave," *a*.

2. A positive wave which, according to Mackenzie, is due to a communicated impulse from the adjacent carotid artery, and hence called by him "carotid wave," *c*. This explanation, however, has been warmly disputed. No doubt it corresponds with the beginning of the ventricular systole, and on this account forms a convenient fixed point for adjusting the time-relations of the tracing; but there are strong reasons for believing that it is a true intravenous wave, connected in some way—not at present understood—with ventricular contraction.

3. The collapse which follows is no doubt due to the aspirating effect on the blood in the veins of the auricle, as it dilates in diastole, and hence is known as the "auricular collapse."

4. Then comes a third positive wave—"ventricular," v; about which there is again great difference of opinion. Indeed, all writers cannot agree as to the exact point in the cardiac cycle in which it actually occurs. It closely corresponds in time to the closure of the semilunar valves, but most observers are agreed that its relation to this event is not constant; and, if so, it obviously cannot be caused by such closure. It is also pretty clear that it does not depend on any change in intrathoracic pressure. Mackenzie and Gibson unhesitatingly refer it to tricuspid regurgitation; but there are great difficulties in accepting this view, unless we admit that such regurgitation is a normal and constant occurrence. There is considerable experimental evidence that it occurs quite independently of ventricular contraction. Morrow believes that it is produced by the onflow of blood from the systemic capillaries and arteries, refilling the veins just emptied by the auricular diastole, and calls it the "first onflow" or "prediastolic wave." It is abruptly terminated by the collapse due to the opening of the tricuspid orifice and ventricular diastole (5).

6. This collapse is in turn succeeded by a progressive rise in pressure, due to the blood flowing into the veins from the periphery during the pause of the heart, and terminating in the auricular wave of the next cycle. This Morrow calls the "second onflow wave."

Effect of Respiration on Circulation.—This forms the subject of a paper by Watson Williams.[14] It is common knowledge that the pulse presents features which fluctuate with a rhythm parallel to that of the respiration; and the so-called "pulsus paradoxus" is a pulse which in general terms is characterized by increased frequency and rising pressure during inspiration, and by opposite features during expiration. Moreover, it is especially characteristic of obstructed inspiration. What is the explanation? Some writers, such as Sir J. Barr,[15] ascribe it to respiratory variations in intrathoracic pressure alone. The object of Watson Williams' paper is to show that the "pulsus paradoxus" is by no means so simple a matter. It results not only from mechanical factors introduced by the pump action of inspiration and expiration, but from impulses generated in the bulbar cardio-inhibitory and vasomotor centres coincident with the respiration impulses; and the effects vary according to the quickness or slowness of respiration, whether it be natural, or deep and forced, obstructed or free; while the strength of the heart-beat, arterial tension, the activity of the bulbar centres, and we may add, the action of the abdominal muscles, the splanchnic area, and even the degree of oxygenation of the blood—all have varying influences in determining the final results. As the relative dominance of these different factors is so variable, the results as shown in pulse-tracings are also inconstant.

In children, as compared with adults, the spinal centres are unstable and reflexes over-active. Hence in young individuals, although their chest walls are more pliable and less fitted to overcome atmospheric pressure on deep inspirations, the bulbar centres are very prone to affect obviously the frequency and force of the pulse ; and when the larynx or main bronchi are obstructed, the forcible inspiratory impulses very often result in the so-called pulsus paradoxus. That these effects on the pulse are *wholly* due to cardio-inhibitory or vasoconstrictor centres is hardly possible, but they are important and, probably, the dominant factors.

Blood-pressure and Pulse-form.—Hirschfelder[16] draws attention to the importance of determining both minimal (diastolic) and maximal (systolic) pressures before arriving at conclusions as to blood-pressure. Though Erlanger's apparatus is the most trustworthy, its bulk, weight, and expense are difficulties for practising physicians. He recommends Strasburger's method for minimal pressure, and the method of Riva-Rocci (with the broad cuff) 5 mm. for maximal pressure. He next points out the misleading results of expressing minimal pressure in terms of percentage of maximal pressure. The real driving force of the arterial stream is represented by the difference between the absolute figures. Lastly, in a note on the dicrotic pulse in typhoid fever, he endeavours to prove that it is the result of the coincidence of very marked peripheral dilatation with somewhat increased heart action, and that it may disappear with the subsidence of either of these factors,

Pulsus Biferiens.—Lewis[17] states that there is only one constant relationship with this form of pulse, namely, a greatly dilated and hypertrophied left ventricle ; and that there appear to be two forms of it, one associated and the other unassociated with arteriosclerosis.

Bodily Posture and Cardiac Physical Signs.—Gordon,[18] in an interesting and careful enquiry into this matter, arrives at the following conclusions : In most cases the change from the erect position to the recumbent : (1) Raises and narrows the normal cardiac dullness ; (2) Makes the first heart sound duller and the second sharper, thus producing the classical "lub-dup" ; (3) Diminishes the antero-posterior diameter of the chest ; (4) Markedly narrows the dullness of an enlarged heart ; (5) Increases the loudness and area of audibility of (*a*) "hæmic murmurs," both at the base and apex, (*b*) mitral and tricuspid regurgitant murmurs, and (*c*) aortic stenotic murmurs (some of these murmurs may only be audible in the recumbent posture) ; (6) Lessens the loudness and area of audibility of (*a*) the "venous hum" in the neck, and (*b*) the presystolic murmur of mitral stenosis (some of these murmurs may only be audible in the erect posture) ; (7) Leaves unaffected the murmur of aortic regurgitation ; (8) Increases the loudness of the accentuated pulmonary second sound ; (9) Makes more marked the reduplication of the reduplicated second sound (in some cases the reduplication is only heard in the recumbent position) ; (10) Causes the partial or complete disappearance of the cardiac dullness in certain cases of cancer in their later stages. Taking all these facts into consideration, therefore, no description of the cardiac physical signs can be regarded as complete which does not include a statement of the position of the patient at the time of observation.

Mitral Stenosis.—It is a well-established fact that a presystolic murmur which is characteristic of this condition may be met with apart from structural changes in the left auriculo-ventricular orifice or valve. Dmitrenko[19] reports a case of this kind, and discusses the subject. In his opinion, all presystolic murmurs, in the absence of actual narrowing of the mitral orifice, depend upon the same essential conditions, namely, disturbance in the relation of the capacity of the left ventricle with that of the mitral orifice, and disturbance in the relative pressures of the contents of the two chambers on the left side of the heart. He would include all cases of the kind as *relative* mitral stenosis in distinction from *absolute* stenosis, and entirely discard the division of murmurs into organic or inorganic groups.

Extra-systoles.—Ritchie[20] gives a clear account of extra-systole—the commonest form of cardiac irregularity. An extra-systole is a ventricular contraction which, instead of occurring in response to a stimulus arriving from the auricle as normally, occurs independently in the form of a premature heart-beat separated by a somewhat prolonged pause from the succeeding beat, which is exaggerated. It may be recognized (1) By the subjective sensation of the heart standing still, followed by a "bump" within the chest, or only the "bump" may be felt, though in many cases the change is unnoticed; (2) By palpation of the arterial pulse and cardiac apex-beat simultaneously, when a double impulse of the heart is immediately followed by an intermission of the pulse; (3) By auscultation of the heart; (4) By exaggerated jugular pulsation at the time of the extra-systole; and (5) By careful analysis of the component parts of a jugular pulse-wave. Extra-systolic irregularity needs to be distinguished from respiratory irregularity of the pulse, the alternating pulse, and irregularity due to depressed conductivity of the heart-muscle, but as a rule the distinction is not attended with difficulty. Wenckebach divides cases of extra-systole into four groups: (1) Those in whom there is no evidence of organic disease of the heart, or of disease elsewhere: the clinical significance of such cases is almost nil; (2) Those in which there is no heart-disease, but disease or disorder in some other organ. In these cases the disturbance results probably from indirect reflex influence (e.g., gastro-intestinal disorders), or from toxic causes (e.g., tea or tobacco); (3) Those associated with disorder or disease of the circulatory system (e.g., arteriosclerosis), though without disease of the heart: this group includes most cases of senile irregularity of pulse; (4) Those associated with organic cardiac disease, which are of all forms the most serious and important.

Stacey Wilson[21] endeavours to show that when, for any cause, the total volume of the blood in circulation is materially diminished, the total bulk of the intra-thoracic viscera is correspondingly diminished by the relative emptiness of the thoracic blood-vessels, especially those of the lungs. This condition is manifested by an elevation of the diaphragm, which has to be maintained at a higher level in order to adjust the cubic content of the thorax. Such rise of the diaphragm may be demonstrated by ascertaining the upper level of gastric resonance in the left nipple line, or the upper border of the liver in the right nipple line. In regard to the clinical significance of high diaphragm, he states that it is an important danger-signal in some cases of severe enteric fever. It is a useful guide also as to the extent to which rectal feeding may be pushed. It must also be borne in mind because, in cases of suspected rupture of a gastric ulcer, the absence of a liver dullness cannot, as is now well recognized, be relied on as an indication of free gas in the peritoneal cavity.

In heart disease also the level of the diaphragm is a useful guide as to the condition of the circulation. If the weakness of the heart muscle be the prime factor, we shall expect a high diaphragm, unless, as in advanced age, the tissues be too rigid to yield easily; if, on the other hand, some obstruction to the circulation, such as valvular defect, be the chief cause of failure, there will be excess of blood in the veins of the thorax, and a normal or a low diaphragm would be found.

The article contains short reports of several cases, and is clearly illustrated by clinical charts.

Condition of the Liver in Cardiac Disease.—Salaman[22] deals with the effect of circulatory back-pressure on that organ. He recognizes three types:—

1. *Engorged Livers*: In this class would be placed those livers which, owing to very recent heart failure, have become suddenly distended with blood. The rare cases of perfect compensation in heart disease associated with normal livers, only becoming congested at death, are also of this class.

2. *Nutmeg Liver*: A liver which has undergone a prolonged course of back pressure of more or less equable degree, except perhaps for the final failure before death. Such livers show more or less distension, and generally abundant central fat, invariable increase of fibrous tissue about the hepatic veins, and traces of a central cirrhosis. This type of liver may be very chronic, but does not presumably approach nearer to Type 3 so long as the cardiac condition becomes no worse.

3. *The Cirrhotic Nutmeg Liver*: This is a liver in which fibrosis—portal, hepatic, and central, especially the latter two—is found strongly developed. Such livers are all small, and weigh from two and a half to three and a half pounds; they are generally pale and show a confused nutmeg appearance. The capsule is thickened and the surface is irregular, being thrown into coarse elevations. In all of these there is either histological or clinical evidence of the occurrence of one or more very severe attacks of failure several months, or a year or two prior to death, failure which has produced contraction and subsequent scarring.

The Liver of Acute Progressive Endocarditis is always of enormous size, and generally of the second type, with evidence of recent distention.

Owing to its distensibility, the liver is capable of acting as a safety-valve to the right heart. Thus a normal liver will take up its own volume of blood under a pressure of twenty-seven inches water (approximately the pressure of the right ventricle); and if allowed to recoil it will by its own elasticity return two-thirds of the amount taken up; and doubtless under normal intra-abdominal conditions it would be able to return the whole. It may be deduced that under conditions of cardiac stress, (1) The liver will draw off a large volume of blood from the right auricle; (2) That after a time certain changes take place, leading to fibrosis, which very materially affects the distensibility of the liver; (3) That the fibrotic process, by increasing the resistance of the liver, prevents the use of the latter as a reservoir in which blood may accumulate; (4) That in complete compensation there are no engorgement of the liver and no back-pressure; and (5) That whilst the liver may be looked upon as a sponge-like safety-valve to the heart, continued use of this safety-valve action leads to its own abolition. Œdema of the feet never occurs until hepatic distensibility has been exhausted. We find ascites in two groups of cases—in the one as the result of acute back-pressure, and in the other of chronic back-pressure. In the former it is always related to livers of Type 1, when the fluid is scanty, averaging about one pint, and of high colour and often blood-stained; whereas the latter is associated with liver of Type 3, where the fluid is abundant, and of clear yellow colour.

In ulcerative endocarditis ascites never occurs. Incidentally the writer refers to the pain associated with the liver in heart disease as being of three kinds, fairly corresponding with the types of liver just described:—(1) Referred superficial tenderness from D.7–D.10 right side consequent on extreme distention of the liver. Dr. H. Head has observed two cases of this kind in the earliest stages of heart disease and failure. Such pain is usually limited to livers of Type 1, and occasionally Type 2, but it is rarely or never met with in Type 3. (2) Tenderness of the liver itself on palpation. This is the commonest pain, and is found both in livers of Types 2 and 3, but more commonly in the former. (3) The liver itself is painless, but the whole abdominal surface is tender on deep pressure. This condition is limited to Type 3, and is due to distention from ascites and peritoneal irritation.

Pulmono-Arterial Regurgitation.—Lees and Cope[23] report two interesting cases. The one was due to infective endocarditis, and the pulmonary valves alone were affected. In the other an aortic aneurysm ruptured into the pulmonary artery, and caused regurgitation.

Tachycardia (paroxysmal).—As a contribution to the pathology of this condition, Hirschfelder[24] publishes an interesting case, in which a man, aged seventy-two, for twenty years had been liable to attacks of tachycardia, beginning and ending suddenly, lasting for some hours. The report is accompanied with tracings of the arterial and venous pulses taken during and between the paroxysms which afford material for the criticism of various theories which have been advanced to explain the occurrence of paroxysmal tachycardia. It was in 1903 that August Hofmann[25] called attention to the fact that during a paroxysm of tachycardia the pulse-rate was exactly or nearly double that observed during the intervals. An interesting primary question arises as to whether the rapid rate is due to ventricular extra-systoles or the slow rate to dropped auricular impulses. In the case reported it is made clear that both the auricles and ventricles were affected together There are other points of detail which make the case worthy of attention.

Epileptoid Attacks in Tachycardia and Bradycardia.—Clarke[26] reports two cases of tachycardia complicated with epileptoid attacks. Similar attacks in association with bradycardia are well known. and are doubtless due to cerebral anæmia. In the tachycardial cases referred to, the pulse would become irregular at certain intervals. and when such irregularity had lasted a while, pauses in the radial pulse were noted. If the pause was short. nothing special happened ; but if prolonged. an epileptoid attack would take place. He suggests that tachycardia is a pure neurosis, characterized by a great increase in auricular contractions from disturbed nervous influences. After a time, from over-exertion, fatigue in the conductivity of the band of His occurs ; missed impulses result, causing longer or shorter delays in the ventricular contraction. When these delays are sufficiently prolonged, cerebral anæmia is caused, followed in due course by the nervous symptoms described. Tachycardia is, like other neuroses, commonly recovered from. The condition may persist for years, and recovery may be complete, or relapses may take place from time to time.

In bradycardia we cannot be so hopeful, the ventricular pauses being due to serious structural changes in the band of His. Sclerosis of the vessels, fatty degeneration of the fibres, and an abnormal increase of fibrous tissue in the bundle, have all been found. The condition is never recovered from, and the chances of sudden death from prolonged cessation of the ventricular contraction should not be forgotten Life in true bradycardia, according to Balfour. is rarely prolonged for more than three or four years.

As regards treatment, **Rest,** both physical and mental, so far as possible, is of greatest importance. In one case, strict confinement to bed prevented convulsive attacks. In another case the patient "dodged" these when threatening, by getting up in bed on his hands and knees, and keeping his head down. The head should be kept low, and the foot of the bed raised. Any deviation from health, such as indigestion, constipation, gout, rheumatism, etc., should be attended to. Massage also may be employed if the conditions allow.

Treatment of Acute Failure of the Heart.—Bolton,[27] writing on this subject, divides cases into two groups, according as the failure depends upon inadequate systolic force, or upon interference with diastolic filling. More often acute failure of the heart results from direct toxic action in connection with acute specific disease. There are three indications for treatment: (1) To prevent, stop, or diminish the toxic process; (2) To diminish the work of the heart; and (3) To stimulate the heart over short periods when syncope threatens. Thus, in diphtheria, the first indication is met by the early injection of antitoxin; the second by rest, with avoidance of all unnecessary effort such as vomiting, suddenly sitting up in bed, mental excitement or shock, or getting up too soon. **Alcohol** is only of use when sudden syncope occurs. Later in the disease, when the heart fails as the result of strain, the pulse is usually rapid. **Strychnine** and **Digitalis** may now be given, because they slow the heart, and, so to speak, put the brake on, thereby resting that organ. Digitalis, in addition, directly acts upon the muscle, but strychnine does not. The application of heat and counter-irritation to the præcordium is sometimes useful, especially when the patient is vomiting.

In typhoid, if the temperature is high, and baths are indicated, the temperature of the water should not be below 80° F. If heart failure appears in spite of the bathing, some stimulation is usually required. Alcohol continuously administered is unsafe, owing to its depressing action on the heart muscle and its tendency to give rise to fatty degeneration. It is useful occasionally in an emergency, and also immediately before the administration of a bath. Hypodermics of strychnine are useful in heart failure in typhoid fever because this drug slows the heart, and therefore gives it rest. It probably also prevents the tendency to collapse from vasomotor dilatation.

When heart failure depends upon increased resistance to the output of blood, the indications are for vasodilator remedies, such as the **Nitrites,** in order to relieve the heart, together with **Venesection, Mercurials,** and **Saline Purgation. Digitalis** may be of service, but should be combined with **Nitroglycerin**, to counteract any tendency to increased blood-pressure.

In acute cardiac failure from diastolic engorgement, such as occurs from severe strain or effort, the indications are unloading of the right heart by hot local application or blood-letting in some form, rest at first, and later on quiet exercises, and no smoking or alcohol should be allowed. Diastolic under-filling may be brought about by loss of blood, general vasomotor paralysis, or by intrathoracic pressure, such as a pericardial effusion. The writer comments on the treatment of each, but space prevents the insertion of further details, for which the reader is referred to the original paper.

Treatment by Physical Methods.—Bennett[28] discusses the treatment of heart disease by baths, rest, exercise, electricity, mountain air, and diet. Though the articles contain little that is new, the subject is clearly presented, and in such a way as to be of practical service. Only a few of the principal points can be here touched upon. The effects of Nauheim baths are summarized as follows: (1) A general dilatation of the capillaries and smaller blood-vessels of the surface, with consequent relief to ventricular contraction; (2) A slowing of the pulse with more complete emptying of the ventricles; (3) An increase in the tone of the capillaries, with probable increase in the force of their rhythmical contractions, causing additional volume and rate of the distal circulation; (4) A floating upwards of the heavy abdominal viscera by hydrostatic pressure; (5) A reflex nervous effect on the cardiac ganglia, whereby the ventricular power is increased and regulated; (6) The action of the skin and kidneys is also increased; (7) Certain beneficial trophic effects, in cases of anæmia, neurasthenia, osteo-arthritis, diseases of the spinal cord, and some cases of peripheral paralysis.

Stress is laid upon the importance of making rest complete enough to be effective on the one hand, and yet not allowing a patient to rest unduly from mere laziness or dread of imaginary dangers. Rest for the mind is often quite as important as rest for the body. [When the patient no longer has symptoms at rest, the time has arrived for making a beginning with exercises.] Passive exercise, such as massage, should come first. In ordering massage the instruction should be as *precise* as possible, especially in regard to rate of movements, degree of strength, and duration of application. The effects of massage are thus summarized :—(1) It has a diuretic action whether employed alone or in conjunction with the Swedish exercises; (2) In cardiac patients diuresis is rapidly induced, especially in cases of visceral and subcutaneous œdema; (3) The general condition improves as the circulation and urine assume more normal appearances; (4) Massage and Swedish exercises can produce increase or diminution of pressure at the level of the heart and vessels; (5) Massage does not interfere with medication. It will, however, supplement the action of drugs, and may be alternated with them, or even replace them, should they become ineffective.

The paper concludes with remarks on the use of electricity, high altitudes, and on the dietetics of heart disease.

Adherent Pericardium.—Wenckebach[29] makes a valuable contribution towards the explanation of some of the more striking features of this condition, with regard to which there is much difference of opinion. *Hampering of the heart:* this is purely of mechanical origin, and is much increased by adhesions of the pericardium to the chest wall, in front and behind, and to the diaphragm, occurring in consequence of adjacent pleuritic adhesions, or by inflammatory changes in the mediastinum. These impediments are in the first instance responsible for (1) Insufficient circulation, frequent weak pulse, low arterial pressure, overfilling of veins; and (2) Systolic precordial retraction. *Respiration is also hampered,* especially during inspiratioy, by interference with the descent of the diaphragm. Consequently, there is little or no forward movement of the chest and abdominal wall during inspiration. Since the alternate rise and fall in thoracic and abdominal pressures is an important factor in forcing blood on from the splanchnic area into the heart, the reduction or abolition of such movements tends to bring about venous congestion of abdominal contents. During inspiration there is imperfect filling of the systemic arteries, and impeded emptying of systemic veins. Thus we find pulsus paradoxus associated with concurrent inspiratory swelling of the veins in the neck. Reference is also made to the diagnostic value

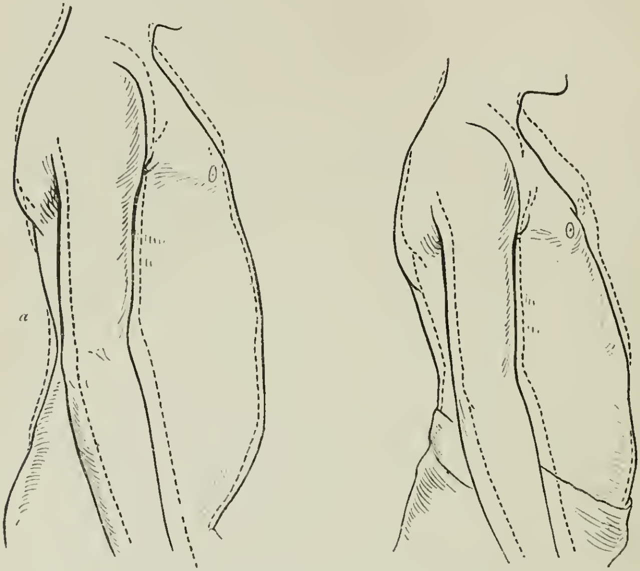
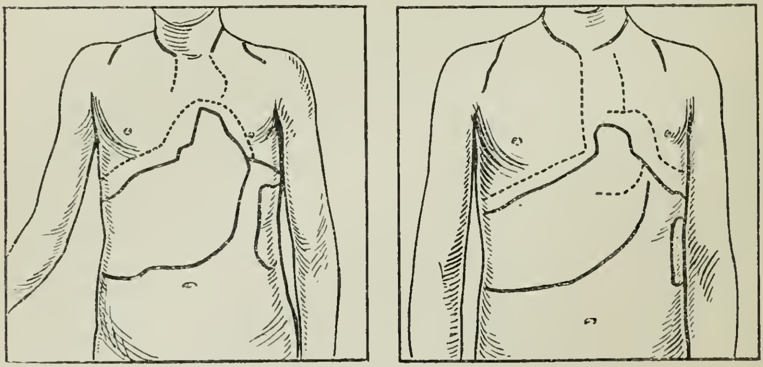


Fig. 39.—Respiratory Movement (*a*) before Operation, (*b*) after Operation.



a *b*

Fig. 40.—Aspect of the Patient (*a*) before and (*b*) after Cardiolysis.

of the absence (or at least a striking diminution) in the movements of the lower sternum and anterior abdominal wall—a feature which is even more characteristic, when present, than the paradoxic pulse, or systolic precordial retraction.

The prognosis of mediastinitis with adherent pericardium has been regarded as practically hopeless, but the operation of "cardiolysis," suggested by Brauer, has greatly improved the outlook in certain cases. It essentially consists in the resection of some ribs and cartilages in the precordial region, the idea being that in so far as cardiac and respiratory trouble depend on fixation of the heart to a rigid chest wall, it would be relieved by the substitution of a weak and supple membrane for rigid resistance. That this is a realizable fact is shown by the accompanying figures, (*Figs.* 39, 40), which represent some of the results obtained by its performance in the case now reported by the author.

The most striking improvements were a better respiration, and marked reduction of the enormous liver (which is so common an accompaniment of adherent pericardium). The heart's action did not improve much, the pulse frequency fell from 125 per minute to 110 and 100 per minute, the pulse remained small and weak, the arterial pressure (diastolic after Oliver) remained 73 to 75 mm. The pulsus paradoxus and the inspiratory swellings of the veins persisted. The flow of urine did not increase very much, seldom reaching one litre ; the general anasarca diminished slowly. Still, after four or five weeks the patient was much better, there being only some œdema of the legs, and the general anasarca had greatly diminished. He felt much better, and was now able to lie on his back and to stoop.

Paracentesis of the Pericardium is discussed by Dock.[30] He points out that in pericardial effusions the position of the heart is anterior, floating on the fluid, and not far from, and perhaps sometimes adherent to, the chest front. On the other hand, it occupies the upper part of the pericardial cavity and is turned somewhat to the left. The operation is never free from danger, but is justified in many cases by the alternative of greater danger in neglecting it. Aspiration is recommended by means of a small syringe, such as a glass antitoxin syringe, fitted with a needle not less than 1 mm. outside diameter, and carried out with aseptic precautions. The site for aspiration must be selected with reference to the results of physical examination ; but the author prefers the lower part of the pericardium, entered from the left costo-xiphoid space. If the result of the puncture is negative, the posture of the patient should be changed ; if still negative, the site of puncture should be shifted. The fluid should be removed as completely as possible. Drainage is permissible, but, unless made necessary, as by the purulent nature of the fluid, it is better to complete the operation at the time, and repeat it as may be necessary.

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1906; [21]*Brit. Med. Jour.* April 27, 1907; [22]*Lancet*, Jan. 5, 1907; [23]*Ibid.* *May* 28, 1907; [24]*Johns Hop. Hosp. Bull.* Oct. 1906; [25]*Deut. Arch. f. klin. Med.* Vol. lxxviii. p. 39; [26]*Brit. Med. Jour.* Aug. 10, 1907; [27]*Lancet*, Mar. 30. 1907; [28]*Pract.* Nov. 1906; [29]*Brit. Med. Jour.* Jan. 12, 1907; [30]*Ibid.* Oct. 6, 1906.

HEAT-STROKE.

(*Vol.* 1894. *p.* 329)—Coplin and Bevin pursued the following routine:—Take the patient's temperature and immerse him in water at the same temperature. Rub with large gritty sponges till the skin is red, and return him to the bath if the temperature is still above 100°. Meanwhile give, either by mouth or subcutaneously: ℞ Strychnine, gr. $\frac{1}{20}$; Atropine, gr. $\frac{1}{40}$; Morphine, gr. $\frac{1}{6}$; and Tinct. Digitalis ♏xx, followed by Spt. Ammon. Aromat., ʒj, in a glass of milk.

HERNIA. (*See also* APPENDICITIS.) *Rutherford Morison, F.R.C.S.*

Recent discussions as to whether such a thing as acquired hernia exists have at least done much to increase interest in the subject of hernia and its treatment. Ingenious and instructive though such speculations concerning the congenital or acquired origin of hernia are, they must not be allowed to govern the treatment which is now established on a satisfactory basis. For a radical cure by operation two things are essential: (1) To remove the entire sac; and (2) To close satisfactorily the opening through which the hernia made its escape. That a radical cure can be brought about by these measures properly adapted has been abundantly proved. Our own experience shows that the hardest work, done in cramped and awkward positions by colliery hewers, fails to produce recurrence of the hernia which has been operated upon satisfactorily. Without selection of cases further than that demanded in all operations, not more than 2 per cent will recur.

H. Betham Robinson[1] states that the term *taxis* is usually limited to the manipulations where the hernia fails to return as it should. He insists that for safety's sake operation is the ideal method of treatment, i.e., an inspection of the contents of the sac.

As complete abolition of taxis is not likely to be accepted entirely, he mentions the methods: (1) By relaxation of the tense structures pressing on the sac; (2) By rendering tense the structures pressing on the sac. With experience, the manipulations of a few moments will, as a rule, decide whether reduction is likely to take place or not.

Should taxis be successful, the pathology is unknown, and a leap into the dark has been taken. What is known of the nature of and septicity of the effused fluid into the sac? Or condition of the coil of bowel? Or how much damaged its walls are? Or how much ulceration has occurred at its neck? Or anything about adhesions? Or whether the adhesions are of the bowel itself to the neck of the sac, or between the bowel and omentum? Or what is the condition of the sac?

Should there be vomiting (especially if this is stercoraceous), hiccough, collapse, signs of inflammation over the tumour, or marked abdominal pain, taxis should *not* be attempted, but operation performed at once.

Speaking generally, inguinal and umbilical herniæ will stand strangulation with least acute damage. This is owing to the fascial structures of the abdominal wall, which vary in tension, and thus do not exert such a continuous pressure on the sac and its contents. If, after twenty-four hours, the symptoms are at all acute, it is wiser not to try taxis.

He advises immediate operation in the congenital and funicular forms of inguinal hernia, although the signs of strangulation are of quite recent onset. His reason is that the constriction is in the form of a ring about the neck of, and in the sac itself, and produces an uncompromising pressure. Such forms occur in young adults, or later. In adults a line of ulceration in the bowel may form very rapidly, or gangrene may even occur.

In the case of a femoral hernia Gimbernat's ligament very rapidly forms a line of ulceration in the bowel, which may give way in the taxis, or after the return of the bowel into the peritoneal cavity. Delay in operation is inadvisable after the end of twenty-four hours.

Ill-results following taxis :—

1. Extensive bruising, shown by hæmorrhage into the bowel, accompanied probably by diarrhœa.
2. Subsequent gangrene produced by rough handling.
3. Tear at seat of constriction produced by rough handling.
4. Infection of peritoneum by fluid in sac.
5. Gut may be gangrenous.
6. Line of ulceration may be so deep that perforation takes place almost immediately.
7. Symptoms of obstruction may persist after successful taxis, due to: (*a*) Strangulation of the gut in the sac by adherent omentum ; (*b*) Adhesions between the coil or coils of intestine : (*c*) Band, or volvulus, or from ring stricture of the large bowel, and *not* due to the contents of the sac at all ; (*d*) Bowel being pushed under an adhesion in the neighbourhood of the internal ring after successful reduction from the hernial sac.
8. Reduction may not be complete. Thus, in a large hernia a small knuckle of gut may be left nipped deep down in the ring. To avoid this be careful to feel if the sac and its rings are quite empty.
9. Rupture of the sac on its distal side. The contents are gradually squeezed through this hole into the subperitoneal tissue, and the sac is emptied. Birkett, who first drew attention to this, says the rent is usually on the posterior wall.
10. Rupture of the sac on its distal side, but only the fluid in the sac reaches the subperitoneal tissue. In this case the whole of the tumour may be apparently reduced, whereas a small knuckle of gut remains strangulated deep in the neck.
11. The constricting ring at the neck may alone be torn away, and reduced into the belly with the bowel.
12. Reduction of whole sac and its contents into the connective tissue behind the abdominal or pelvic walls, particularly in the iliac fossa—i.e. "reduction *en masse*."
13. The sac may be bilocular. The contents may be successfully

reduced from the first sac into another one behind this. This posterior sac is usually situated at the internal abdominal ring.

Another condition forming a sequel to taxis or to herniotomy is a paretic condition of the damaged bowel.

H. S. Clogg[2] states that in a total of 3404 cases collected from the literature on this subject where a radical cure for inguinal or femoral hernia was performed, the appendix vermiformis was actually seen in the sac sixty-five times. The condition occurs with equal frequency in inguinal and femoral herniæ. When the appendix is present in a hernial sac two accidents may occur to it, viz., the more frequent appendicitis and the less frequent strangulation of the organ at the hernial ring. The former is more frequently observed in an inguinal hernia. In appendicitis occurring in femoral herniæ the appendix appears to be more often the only content. When the herniated appendix becomes strangulated it is usually the sole content of the sac; occasionally there may be omentum in addition.

In the majority of cases it is only possible to make a diagnosis between appendicitis and strangulation in the early stages. Later, the strangulated appendix becomes acutely infected, making the discovery of the primary cause very difficult. In both cases there is pain and vomiting. In appendicitis the temperature is elevated, but not so high as in an abdominal appendix, where the peritoneum is normal and not thickened as it is in a hernial sac. In strangulation the temperature is subnormal at first, and only rises when inflammatory changes set in. In appendicitis the coverings soon show evidence of inflammation; in strangulation such changes are much longer delayed. "Pathologically, the strangulated appendix has in the sac clear, slightly turbid, or blood-stained fluid, with an absence of inflammatory lymph. The appendix is in a condition of venous hyperæmia only; is in the majority of cases free from adhesions, and has not any concretions in its interior; it shows at the level of strangulation a deep furrow." It is as safe to reduce an incarcerated appendix as it is any other portion of the bowel.

He has collected fifty-three cases from the literature, which he regards as strangulated appendix. The length of the appendix is not an etiological factor, though the greater portion is usually herniated. In the majority of cases the organ lies free in the sac without any adhesions. The meso-appendix is usually well-developed and rich in fat; this is a probable etiological factor in strangulation. Of the fifty-three cases only three occurred in males. Two were in infants, the third being in an adult, aged 57—all three were inguinal herniæ. Fifty cases occurred in females, and in every case the strangulation was in a right-sided femoral hernia. In forty-five cases where the age is mentioned, the youngest was 21 and the oldest 87 years of age. In eighteen cases the existence of a hernia previous to the symptoms was not known; in the remaining cases this fact is not recorded. In the majority of the cases the hernia was easily reducible, though this was not always the case. "The characteristics of these herniæ are that they are of small size, generally easily reducible, only present on occasions, sometimes only having been observed once or twice previously to strangulation." He considers where the existence of a hernia was previously unknown, the sac is of congenital origin. For the appendix to be strangulated, it is necessary to have a sac into which it can slip with a narrow rigid neck.

The majority of cases were ushered in with acute local symptoms: in thirty-eight there were also abdominal symptoms. Pain was a constant symptom; it may be local, round the umbilicus, in the lower abdomen, or in the right iliac fossa. In a few cases the abdomen was distended or tender, but free from rigidity. Where there was not vomiting there was nausea. Constipation is the rule. The local signs are those of strangulated hernia. Collapse is *not* a marked feature. Occasionally an appendix becomes irreducible, which may or may not lead to strangulation.

"The diagnosis of a strangulated appendix is not mentioned in any one case as being accurately made." It has to be made from a strangulated omental hernia; from a Richter's hernia, or possibly from a tubo-ovarian hernia torsioned or strangulated. He definitely asserts that there are no practical signs by means of which a correct diagnosis of strangulated appendix can be made. He therefore advocates the exploration of any irreducible groin tumour which can reasonably be suspected to be a hernia.

The prognosis of this condition is very good, for every case recorded recovered. The time that operation was performed after the onset varied from twelve hours to five weeks. In several cases the appendix was reduced, in others there was an appendicectomy. Should it be impossible to reach the cæcum through the hernial opening, it should be reached by the abdominal route. He records three cases of his own which he cured by operation.

C. N. Dowd[3] mentions the four situations where a *lumbar* hernia has been described: (1) The triangle of Petit; (2) Below the twelfth rib, the ileocostalis forming the posterior boundary, the external oblique the anterior, and internal oblique below. It is covered by the latissimus dorsi. It is called the superior lumbar triangle (or rhombus) of Grynfelt and Lershaft; (3) A defect in the latissimus dorsi aponeurosis, as described by Braun; (4) Inconstant defects of the lumbar region, described by Lieber and Hartmann. Sultan, in 1902, asserted that neither Petit's triangle, nor the superior lumbar triangle, had ever been really proved to be the orifice of a hernia. Baracz, after exhaustive examination of the literature, stated in 1902, that only three cases are known where the place of exit was verified by autopsy. The following case is of interest:—

The subject was a male child 3½ years of age. A lumbar swelling was noticed at the age of three months, which corresponded to the site of Petit's triangle. An elastic belt was effective for two years, when it was found that as the child grew so did the hernia. The opening was larger than the palm of one's hand, and there was a marked bulge on exertion or on coughing. There were two transverse constrictions across it, and in the lower part there was a distinct soft nodule. At the operation the hernia was seen to protrude through Petit's triangle, which was greatly enlarged. The transverse bands were thickened portions of the lumbar fascia, while the soft nodule turned out to be the vermiform appendix. Appendicectomy was performed, and the sac removed. The margins of the external oblique and latissimus dorsi were approximated as far as possible, but a triangle defect still remained. The latter was closed by turning forward a flap from the latissimus dorsi, and returning it to the external oblique. When seen eight months after the operation the result was good ; the child was able to walk, and hold his body well, there being no mal-result from the muscle resection.

E. R. Secord[4] records a rare case of hernia into the ileocolic fossa. The boundaries of this fossa are the ileocolic fold in front ; the ileum with its mesentery, and a small portion of the inner and upper part of the cæcum, being behind. Moynihan described the fossa, and regarded it of anatomic interest only, no case of hernia into the fossa having been reported previous to 1899.

The Saccular Theory of Hernia.—R. Hamilton Russell[5] says that by saccular he means a pre-existing sac, for he rejects the view that a hernia can ever be acquired. He considers that there are "special inconveniences associated with the word 'congenital' in connection with hernia." At present a small proportion only of the profession believe in the saccular theory, the main body having yet to be converted. In his previous contributions on the same subject, he has maintained that all facts point to the saccular against the traditional theory as to the etiology of hernia.

He gives the following defects in our present position with regard to hernia : "(1) A double etiology (congenital and acquired), with resulting uncertainty as to the fundamental principle of treatment ; (2) A multiplicity of operations, an infallible sign of vagueness, and uncertainty of principle ; (3) Uncertain results of operation, due to uncertainty as to the principles governing it ; (4) A fatal facility for explaining away failure as being due to inherent weakness of the muscular structures in the inguinal region (this explanation is always fair, and quite warranted by the accepted but erroneous views as to the etiology of hernia) ; and (5) The misuse of the truss, notably in the case of children. Here, at any rate, is a field that offers scope for improvement." He then proceeds to state what he considers the saccular theory will do for the surgery of hernia, following the above five classes *seriatim*. It will have for results : (1) A single etiology, with a fixed principle of treatment ; (2) A single operation, the removal of the sac ; (3) Certainty of good result, provided the operation has been performed faultlessly ; (4) The recognition that if recurrence takes place it will be the result of an operative defect ; and (5) The abolition of the truss, except for cases in which operation is contra-indicated or declined."

The Radical Cure of Femoral Hernia.—W. B. Coley[6] contributes a paper based upon 117 operations which he performed on 105 patients in the fifteen years ending 1906. In thirty-four of these operations the patients were children between the ages of two and fourteen years ;

nine were males and eighteen females. Of the remaining eighty-three operations upon adults, twelve were males and sixty-five females.

The author mentions the various operations designed for the cure of femoral hernia, in all of which he has no faith except the method of Bassini, and a purse-string suture. He has done Bassini's operation in fifteen cases, the only variation being the substitution of kangaroo tendon for the silk used by this operator. There was one relapse, which he attributed to suppuration. The purse-string suture method was employed in 103 cases. Here an incision is made as for inguinal hernia, only a little lower and a little shorter. The sac is isolated, opened, and ligatured high up, the redundant tissue being removed. A purse-string suture is now carried through the inner end of Poupart's ligament in front, Cowper's fascia behind, through the fascia lata overlying the femoral vein, and finally emerging through the roof of the canal about a quarter of an inch distant from the starting-point. When the suture is tied the opening is completely obliterated. Nearly all the cases were traced afterwards, and there was not a single relapse.

The Round Ligament in Femoral Hernia.—L. Cherrier[7] records two cases, in one of which the round ligament formed a loop, both ends of which entered the crural ring in front of, but not adherent to, the sac; while in the other it formed a loop behind and adherent to the sac. Evidence in proof of the fact that the round ligament was found is given.

The Relations of Appendices Epiploicæ to the Complications of Hernia.—H. Vulliot[8] reports several cases from the literature, including his own, and concludes that intra-abdominal torsion of an epiploical appendix may necessitate laparotomy. The free end may be found as a foreign body. Its pedicle may become twisted, and adhesions of the appendage round the intestine may cause obstruction.

In hernial sacs its pedicle may become twisted, producing signs of inflammation which will be difficult to distinguish from strangulation. The appendage may slough off and form a foreign body in the sac.

Appendices epiploicæ may adhere to the sac and render the hernia irreducible. Or they may, after twisting, form an adhesion to the sac and separate from the intestine, forming a thickening in the wall of the sac.

On the left side, when local signs of inflammation or strangulation of the contents of the sac are present without intestinal obstruction, sigmoid epiploical appendages should be kept in mind.

REFERENCES.—[1]*Brit. Med. Jour.* Jan. 5, 1907; [2]*Lancet*, Oct. 20, 1906; [3]*Ann. Surg.* Feb. 1907; [4]*Ibid.* Nov. 5, 1906; [5]*Lancet*, Nov. 8, 1906; [6]*Ann. Surg.* Oct. 1906; [7]*Rev. de Chir.* Feb. 1907; [8]*Sem. Méd.* July 3, 1907.

HERNIA IN CHILDREN.

Rutherford Morison, F.R.C.S.

E. M. Corner[1] reminds us that in 1904 he stated that the majority of herniæ in children are acquired, and not congenital. He objects to other surgeons' statistics in which herniæ are classed as "congenital" only by observations made at the operating-table. Thorough examination should be made and facts noted in the out-patient department, and the result checked at the operation.

Observations in 700 Cases.

	Per cent.
Right Inguinal Herniæ	38·3
Right and left ,,	10·8
,, ,, ,, + Umbilical	8·0
Right Inguinal + Umbilical	12·0
Left Inguinal Herniæ	10·6
,, ,, ,, + Umbilical	2·7
Umbilical Herniæ	16·2
Epigastric ,,	·9
Femoral Herniæ, right and left	·15
Complicated by a Ventral Hernia between the Divaricated Recti	14·3
Single Herniæ	66·0
Multiple ,,	34·0

The above include all the ordinary recognizable herniæ, but no special observation was made on the existence or not of a median ventral hernia between the upper part of the recti abdominalis. It was noticed casually in 14·3 per cent of cases. Recognizing the importance of this, he had fresh observations made by his clinical assistants. The first investigation showed that multiple herniæ are far more frequent in children than they are in adults. "This is suggestive either of the multiplicity of congenital sacs in one subject, or of one factor which was the common cause for the herniæ present."

To correctly observe if there is a ventral hernia between the divaricated recti, the muscles should be put into action. This may be usually accomplished by placing the child on its back, when it will cry! He thinks that if correct observations are made it will be found more frequently than indicated in his second series, where it was noted in 24·21 per cent out of 2600 cases. Like all other herniæ, this median ventral hernia may be congenital or acquired. It differs from inguinal and femoral herniæ in the sac having no neck, and communicating widely with the abdomen. "Its presence is demonstrable with its first appearance, which need not be so in cases of the others mentioned." It is very uncommon to find it in the newly-born infant: only one case out of 122.

Observations by Cursham Corner show that on the average the umbilical cord separates about the fifth day. From this time until the eighth day, when the scar becomes firm, there is always bulging. The size of this bulging is dependent upon the length of cord left proximal to the ligature.

Statistics on the incidence of a median ventral hernia between the divaricated recti vary considerably. Thus one observer, who helped to compile these statistics, only found it in 18·5 per cent of cases, where the children examined were aged from one to 365 days. Another observer, who examined infants between the age of six and twelve months discovered it in 58 per cent of cases!

Statistics show that the frequency of this median ventral hernia increases steadily from "birth, to attain its maximum in the second year of life ; then it falls steadily until adult life is reached, when it is rarely seen." He considers that it becomes cured spontaneously as growth takes place. "Its significance in connection with the formation of inguinal hernia is enormous." He thinks there is a common cause.

SECOND SERIES OF 2600 OBSERVATIONS.

	Per cent.
Herniæ present in	32·7
Right Inguinal Hernia	4·2
,, ,, ,, + Median Ventral Hernia between the Divaricated Recti	4·7
Right Inguinal Hernia + Umbilical Hernia	·8
,, ,, ,, ,, ,, + Median Ventral Hernia between the Divaricated Recti	2·3
Left Inguinal Hernia	1·3
,, ,, ,, + Median Ventral Hernia between the Divaricated Recti	2·1
,, ,, ,, + Umbilical Hernia	·4
,, ,, ,, ,, ,, + Median Ventral Hernia between the Divaricated Recti	·5
Umbilical Hernia	4·2
,, ,, and Median Ventral Hernia through the Divaricated Recti	13·3
Median Ventral Hernia through the Divaricated Recti	61·3
Right and Left Inguinal Hernia	1·0
,, ,, ,, ,, and Median Ventral Hernia through the Divaricated Recti	1·4
Right and Left Inguinal and Umbilical Herniæ	·1
Right and Left Inguinal and Umbilical Herniæ and Median Ventral Hernia through the Divaricated Recti	1·5
Epigastric Herniæ	·9

"The median ventral hernia was found by itself in 61·3 per cent of the cases of hernia ; and when in combination as well in 87·1 per cent —a very strong indication of the probable origin of a very large number of the concomitant inguinal herniæ, and, as the congenital causation of them in certain cases is not disputed, of the composite causation of herniæ. Every variety of hernia is more common when associated with another between the divaricated recti than when alone or associated with any other variety of hernia."

With regard to the formation of herniæ, there are two main theories : (1) That the hernial sac is formed during development ; and (2) That it is caused by increased intra-abdominal pressure, due to intestinal fermentation. Taking the second theory, the hernia can be produced in one of two ways, or by a combination of both. The hernia may be protruded by direct pressure, or the pressure acts indirectly by modifying the growth of the tissues, and facilitating the development of a hernia by direct pressure later. In very young children the valvular action of the inguinal region may be rendered incompetent by the mere stretching of the soft-growing tissues.

H. S. Clogg[2] states that in children the inguinal variety of hernia occurs more frequently than any other. The femoral variety is rare ; obturator and sciatic herniæ are curiosities. Umbilical herniæ occur with some frequency, the "congenital" variety being frequently a fatal malformation ; the "infantile" type being readily cured by expectant treatment. Whether there is a complete disappearance of the hernial sac in the latter case is not positively known.

Inguinal herniæ are divided into two varieties, viz., the direct and indirect. He has not seen a marked case of direct hernia in the child ; though in older children he has at the operation seen a bulging of the posterior wall of the canal. This has never amounted to a hernia, and is only seen after division of the external oblique. He has not seen a marked interstitial hernia unassociated with an undescended testicle. His experience is, therefore, limited to the indirect type of inguinal hernia.

He uses the broad classification of "congenital" and "acquired," according to the etiology of the sac. He dwells on the importance of thoroughly understanding the underlying pathological conditions. For an acquired hernia, there must be increased intra-abdominal pressure, together with muscular weakness. He has failed to find this muscular weakness at operations, the internal oblique, as a rule, being quite well developed. It is true that this muscle is weak where there is a large hernia, but such weakness is due to stretching, and is the result of the hernia, not the cause. Were the condition due to muscular weakness there would be a recurrence following operation ; such a sequel is extremely rare.

The irregularities, such as flaps, bands or constrictions, in the interior of the sac, its not infrequent hour-glass shape, and the narrowing so often seen at the internal abdominal ring, are all obviously due to imperfect attempts by nature to obliterate the congenital processus vaginalis. Should no such peculiarities of the sac be made out at operation, the history of the case is of value in differentiating its type of sac. A history of the sudden appearance for the first time of a hernia of large size, and which completely descends into the scrotum, or forms a large inguinal swelling, must mean a descent of abdominal contents into a preformed sac. It is sometimes quite difficult to obtain the descent of the hernial contents, although a hernia of large size had previously been seen down. If the sac depended upon primary muscular weakness it ought to be constantly occupied, its neck not being sufficiently supported. If the cord be palpated in this case, thickening will be felt, which is due to the empty hernial sac. He thinks, therefore, that there is no doubt that the hernial sac in children is of congenital origin. He has little doubt that the majority of inguinal herniæ in adults similarly depend on congenital sacs.

Dismissing acquired herniæ as probably not occurring in children, he suggests a new nomenclature. Assuming that all herniæ have, as their sac, the processus vaginalis in whole or in part, he divides them into those, with (1) Total funicular sacs, and (2) Partial funicular sacs. He thinks that these include all varieties of herniæ met with in the child.

His series of 126 cases comprise 115 male and 11 female children. About 10 per cent in the male cases, and ten out of the eleven female cases were of the total funicular type.

TREATMENT.—Regarding these herniæ as congenital, he considers the only cure is removal of the sac. He has never seen a case where he has been able to detect any attempt at obliteration of the sac, in any part, even when a truss had been worn prior to operation. He is very sceptical about the reported "cures" through wearing a truss. Frequently the hernia reappears in adolescence, though it may be retained indefinitely, and particularly so in cases in which the neck of the sac is very narrow, as it so frequently is. Some reported "cures" where the hernia is present at or just after birth, and where a truss has been immediately applied, are due to nature. The processus vaginalis which normally separates from the abdominal cavity about this time, may be a little delayed, and a "cure" would have been effected without the aid of a truss. For three years he has entirely abandoned the use of a truss for infants, except in a few special cases. "If a hernia is seen after the first few weeks of life, the only cure is by operation." "Circumcision, the correction of diarrhœa or of constipation, and the treatment of other conditions from which the child may suffer, cannot possibly have any influence upon the cure of these herniæ."

He advocates an operation about the third or fourth month of life, when a most satisfactory recovery is usually made. In hospital practice the operation must be deferred until the child is weaned. The indications for operating earlier are: "(1) Strangulation; (2) Two or three attempts at strangulation with difficult reduction; (3) Large herniæ, which frequently mean cæcal hernia, and are not retained by any truss; (4) Any case of hernia which cannot satisfactorily be prevented from descending by any truss."

He considers that the operation in children is more difficult than in adults, because the subcutaneous fat is thick, while the aponeurosis and sac are delicate. The operation is similar to that done in the adult. Care must be taken not to tear the sac at the internal abdominal ring, for if the aperture with the peritoneal cavity be not obliterated, a cure cannot be expected. He always makes a point of cleaning the sac thoroughly on the inner side, as the bladder is an abdominal viscus in the infant, and may easily be drawn into the wound. A quantity of subperitoneal fat in this situation should make the operator suspicious of adjacent bladder. If the sac is of the total funicular type he merely divides it, leaving the lower portion open, the upper portion being removed. Care must be taken of the vas and its vessels, which usually lie behind the sac. The method of closing the inguinal canal varies with the size of the hernia and the condition of the internal oblique. If the latter is strong it is approximated with the torn cremaster to Poupart's ligament by two sutures which lie *over* the cord. If this muscle be thinned from pressure, he recommends that internal oblique and conjoined tendon be pleated to Poupart's ligament *behind* the cord. The cut external oblique aponeurosis is repaired, and if it is lax this is effected by overlapping. The sac is ligatured off with silk; excepting for this, catgut is used throughout.

Twenty-six cases of the series were operated upon within the first six months of life, the youngest being five weeks. Between the ages of seven and twelve months there were thirty-four cases; during the second year, thirty cases; after the second year, thirty-six cases. There was no fatal case. Seventy-five per cent of the cases were traced after operation, and in not one was there a suspicion of recurrence. In twenty-five cases of the series the hernia was bilateral, and in the majority of cases both were operated upon the same day.

Small intestine is without doubt the most frequent content of the sac. Though omentum is not infrequently seen in older children, it is rare to see it in the infant. He reports three cases of appendicitis in a hernial sac. There was one case where there was a hernia of the bladder. He also saw this viscus in six other cases. The three types of hernia of the bladder are: (1) Without a sac; (2) Sac incomplete; (3) With a complete sac. Care must be taken not to mistake a hernia for a hydrocele, for in the infant both are translucent. In any case he does not approve of tapping, as frequently both are present. There were eleven cases of inguinal hernia in the female child. These were not noticed so early in life as in the males. In eight cases the sac was empty at operation, in three cases the ovary and Fallopian tube were present, all three being left-sided herniæ. He had two cases of tuberculosis of the sac. In both, the sac as well as the peritoneum were studded with tubercles, which were confirmed microscopically afterwards. This condition is more frequently found in children than in adults.

Attempted strangulation is a very common complication with these herniæ, usually within the first year, and often within the first six months of life. Before employing taxis an anæsthetic should be given. In nine of his cases he operated for irreducibility, and the site of strangulation was more frequently found at the internal than the external abdominal ring.

E. D. Telford[3] says the uncommon event of a strangulation in infancy is due to the extreme elasticity of the involved structures. It is rare to find omentum in a hernial sac in childhood; he is not acquainted with a single instance of acute strangulation where omentum has been found in the sac.

Two hundred and twenty-four cases have been collected where herniotomy has been done to relieve a strangulated inguinal hernia in children under four years of age. Full notes were not available in all. In 112 of these, strangulation occurred before the age of six months. More occurred during the first month of life than in any other single month. Even allowing for the fact that there is a tendency for surgeons to record only the cases of very early age, he still thinks strangulation is an event which is more likely to occur in the earlier months of existence. Of sixty-nine cases where the sex is reported, only three were in female children. The hernia was right-sided in seventy-three out of ninety-five cases recorded. and left-sided in twenty-two.

Other statistics which the author gives on this point are those from the Pendlebury Hospital, where out of 200 consecutive cases of single hernia in male children. 138 were on the right and sixty-two were on the left side. Many of the cases became strangulated at their first appearance, which occasionally happens in a patient of advanced years. Nearly all the "sacs" were referred to as "congenital." He thinks that probably the majority were in reality of the funicular variety. The contents of the sac were stated in 104 cases. Of these, small intestine was found in eighty-three, and cæcum with appendix in twenty-one cases.

With a sac containing small intestine, there are usually acute symptoms and a rapid march of events. The constriction is tight, the damage to the gut soon follows, and if unrelieved, gangrene quickly ensues. Where the cæcum and appendix are found in the sac, the process is usually of a slower type. The general symptoms are less acute, and the local condition less severe. In this case the œdema and swelling are always considerable, especially of the meso-appendix. It may be quite impossible to return the hernia through the undivided external abdominal ring. In twenty-six out of thirty-seven mentioned cases the constriction was at the neck of the sac in the position of the internal abdominal ring; in the remainder at the external abdominal ring. A rapid and large effusion into the hernial sac is an almost constant feature of hernial strangulation, and has on more than one occasion led to a confusion in diagnosis between strangulated inguinal hernia and hydrocele.

The onset of the condition is commonly marked by the continuous screaming of the patient. As this, together with vomiting. is a common disorder with infants, the grave cause is often not appreciated. Collapse is great, and soon reaches an extreme degree. The removal of the cause by operation, however, is often followed by a quick recovery.

He thinks that a diminution in the amount of urine passed. or even total anuria, appears with sufficient constancy to render it a point of value in diagnosis.

Macready, in his "Treatise on Rupture," states that "in children a strangulated hernia can almost always be reduced." Telford thinks this is probably true in many cases if they are seen in a sufficiently early stage. If taxis be employed, it should have the assistance of full surgical anæsthesia; it should never be tried more than once in infants, and then only for a short time. He advocates **Herniotomy**, accompanied by a "radical cure," the sac being ligatured off close to the parietal peritoneum. The constriction can often be dilated rather than incised, and in the majority of cases it is not necessary to incise the external oblique aponeurosis. If the inguinal canal be opened up, he recommends a Bassini. Although correct statistics are unavailable, he considers that the prognosis is better in infants than it is in adults.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* June 5, 1907; [2]*Pract.* Sept. 1907; [3]*Med. Chron.* Feb. 5. 1907.

HERPES ZOSTER.

(*Vol.* 1903, *p.* 384)—**Absolute Alcohol** applied locally quickly relieves pain and promotes healing. (*Vol.* 1891, *p.* 271)—Others advocate the addition of **Resorcin, Thymol,** or **Menthol,** 1 to 3, per cent to the alcohol, with or without cocaine. (*Vol.* 1888, *p.* 319)—A dusting powder consisting of **Starch** and **Oxide of Zinc** has a soothing effect. (*Vol.* 1889, *p.* 291)—Bulkley recommends a pill containing **Zinc Phosphide** and extract of **Nux Vomica,** of each ½ gr., every three hours, as shortening the duration and the pain of an attack. (*Vol.* 1900, *p.* 302)—**Ichthyol** mixed with water and used as a paint may abort the development of the vesicles.

HICCOUGH.

(*Vol.* 1900, *p.* 494)—**Iced-water Gargling** has proved effective; (*Vol.* 1901, *p.* 312)—Also **Traction on the Tongue.** (*Vol.* 1902, *p.* 343)—Pasteur cured two hysterical cases by **Ether Narcosis.** (*Vol.* 1889, *p.* 291)—Many drugs are recommended, amongst them **Pilocarpine** hypodermically, **Tinct. Opii,** ♏x, every four hours, **English Vinegar,** ʒj or ʒij, sweetened if desired, and **Mustard Draughts** (a teaspoonful of mustard being added to ℥iv of boiling water, and the mixture strained).

HYDROCELE.

(*Vol.* 1899, *p.* 330)—Neumann, after disinfecting the scrotal skin, introduces an aseptic trocar, pushes it well in and leaves the cannula in after the sac is emptied. A compressing bandage leads to adhesion between the two layers of the sac, and after two days the cannula is removed. Thus the sac is obliterated without acute inflammation. Pilate and Vissemans (loc. cit.) empty the sac with trocar and cannula, and then wash it out through the cannula with a boiled 3 per cent **Carbolic Lotion** till it returns quite clear. The puncture is closed and a suspensory bandage worn. This cures simple cases painlessly. Miller (loc. cit.), after emptying the sac in the same way, injects ♏xv of a 1–500 **Sublimate Solution.** (*Vol.* 1903, *p.* 400)—Fieux slowly injects a Pravaz syringeful of 10 per cent **Zinc Chloride** solution without emptying the sac.

HYDRONEPHROSIS. (*See* KIDNEY, SURGERY OF.)

HYDRORRHŒA, NASAL.

(*Vol.* 1903, *p.* 489)—Lermoyez gives **Atropine** and **Strychnine** internally.

HYPERCHLORHYDRIA.

(*Vol.* 1902, *p.* 238)—Illoway forbids alcohol, smoking, acid drinks and condiments, tea, coffee, and all hot dishes. A preponderance of **Nitrogenous Food** is allowed. Half a glass of **Vichy Water** is taken at 11 a.m., at 4.30 p.m., and at bed-time. Constipation is treated by **Massage.** Einhorn (loc. cit.) follows much the same line of diet; he restricts but does not prohibit starchy foods; small frequent meals are suggested. **Sodium Bicarbonate** in full doses (1–2 teaspoonfuls) is given about two hours after meals: to this, in constipated cases, **Rhubarb** and **Magnesia** are added. (*Vol.* 1901, *p.* 195)—Large doses of **Bismuth** (ʒiiiss of the subnitrate) are given early every morning, through a tube, with benefit.

HYPERIDROSIS OF HANDS.

(*Vol.* 1899, *p.* 332)—The following lotion is recommended: R Borax, 15 parts; Salicylic Acid, 15 parts; Boric Acid, 5 parts; Glycerin, 60 parts; Dilute Alcohol (50 per cent), 60 parts.

HYPERKERATOSIS. (See CROCODILE SKIN.)

HYPERPYREXIA.

(*Vol.* 1904, *p.* 436)—Assist the diffusion of heat from the skin by **Hydrotherapy** (sponging, packs, baths). Stimulate the circulation with **Strychnine, Alcohol,** or **Sal Volatile.** Inject **Normal Saline Solution,** either under the skin or into a vein; the latter acts more quickly).

HYPERTROPHIC PULMONARY OSTEO-ARTHROPATHY.

Robt. Hutchison, M.D.

To the last volume of St. Bartholomew Hospital Reports, J. Finlay Alexander[1] has contributed an important paper on this condition, and reports five cases, which bring the number of recorded cases up to 103. Eleven of these Alexander dismisses as merely instances of clubbing of the fingers. Of the remaining cases eleven were associated with hypertrophic biliary cirrhosis or other disease of the liver. There remain eighty-one cases of typical pulmonary osteo-arthropathy. Among these predominate diseases in which pus is formed or in which tissues break down with retention of secretion—bronchiectasis twenty-five, chronic pulmonary tuberculosis fifteen, empyema eight, and malignant disease of the lung eight. Diseases rarely associated with osteo-arthropathy are chronic bronchitis, pneumonia, pleurisy, spinal caries, amyloid disease, influenza, and chronic heart disease. The introduction of skiagraphy has enabled a more accurate description to be given of the changes present in pulmonary osteo-arthropathy than was previously possible. There is a symmetrical deposit of subperiosteal bone on the shafts of the long bones. This begins as a thin sheath about four or five inches above the wrists, and covers the lower ends of the radius and ulna as far as the epiphysial line, where it is thickest. The carpal bones are not affected. The metacarpals and the first and second phalanges, in less degree, are thickened. The terminal phalanges are not affected. In rare cases the upper ends of the radius and the ulna, and the lower end of the humerus are affected. In the lower extremities the lower ends of the tibia and fibula are most affected, and the layer of new bone may be nearly a quarter of an inch thick. Sometimes the lower end of the femur and upper ends of the tibia and fibula are affected. The bones of the foot are affected like those of the hand. Deposits on the clavicles, ribs, and iliac crests have also been observed. Effusion occurs into certain joints, especially the wrists, ankles, knees, and joints of the fingers. The fingers and toes are always clubbed. This is due to fatty and fibrous hyperplasia of the soft parts, and not to enlargement of the bones, as was supposed. In many cases the connective tissue covering the affected bones is thickened from hyperplasia. These bony changes appear to be due to irritation of the periosteum by toxins absorbed into the blood. Some obstruction to the circulation, which produces its greatest effect on the distant capillaries of the limbs, appears also to play a part. The influence of septic absorption is shown by a remarkable case of bronchiectasis reported by Alexander. When the bronchiectasis was acute (the amount of sputum secreted weekly amounting to from five to nine pints) and septic absorption was considerable, the osteo-arthropathy was at its height. When the bronchiectasis improved, the osteo-arthropathy diminished; and when the secretion had almost disappeared, joints, soft parts, and bones again appeared normal. The bones had been covered with a loose, irregular layer of new bone. This became consolidated and so closely applied to the shafts that it could only be distinguished in skiagrams.

Batty Shaw and Higham Cooper[2] report a unique example of the condition occurring in a woman of twenty-one, who was the subject of congenital heart disease, but in whom the lungs were healthy. The writers consider that this case confirms the view that the osteo-arthropathy is the result of a toxic substance generated locally by tissue metabolism, and which is retained owing to defective circulation. This is the only example of the condition occurring in a case of congenital heart disease uncomplicated by pulmonary tuberculosis which has yet been reported. Their case is also unusual in that the changes were most pronounced in the lower limbs.

Hall[3] records two cases, with skiagrams, one in a man of forty-two, who suffered from bronchiectasis, and the other in a boy of fourteen with sarcoma of the lung. He discusses the pathology of the condition in considerable detail, and regards it as being most probably an advanced stage of the same process as clubbing. He considers that obstruction of the circulation plays a large part in the production of the changes, but admits that this has not always been present, and concludes that "we cannot at present determine accurately the pathology of the disease."

References.—[1]*Lancet*, April 20, 1907 ; [2]*Ibid.* Mar. 30, 1907 ; [3]*Edin. Med. Jour.* Aug. 1905.

ICHTHYOSIS.

E. Graham Little, M.D., F.R.C.P.

Allan Jamieson[1] reports some interesting cases of ichthyosis in which marked and permanent mitigation of the disease was obtained by careful local treatment. The body was scrubbed with resorcin and salicylic acid and superfatted soap, and anointed with the following salve :—

R	Resorcin	ʒss	Ol. Amygdalæ	℥ss
	Lanolin	℥iss		

Or

R	Resorcin	ʒj	Glycerin of Starch	℥j

The scalp was washed at intervals with yolk of egg and warm water, or with quillaia infusion. In only one case was thyroid given, and that only for a short time, and with no favourable effect on the skin condition. The only internal treatment recommended is **Cod-liver Oil** in small doses. Of the external remedies, **Resorcin** is the most valuable, combined with friction with soap.

Reference.—*Brit. Med. Jour.* Feb. 1907.

ICHTHYOSIS HYSTRIX.

E. Graham Little, M.D., F.R.C.P.

Borrowman[1] reports a very interesting case of congenital unilateral ichthyosis hystrix. The patient, a girl of fourteen, had numerous warty growths arranged in a linear distribution confined to the left side of the body, and extending in bands and patches from the neck to the foot. The affection had persisted from birth, and had not materially altered since that date. There was no history of warts, moles, or nævi in the family. The case is very unusual in the extent of the distribution, as depicted in the excellent photographs which accompany the text.

The only treatment for such cases is by **Excision** of the warty growths; when these are small, **Caustics** like sodium ethylate may be used locally.

REFERENCE.—[1] *Scot. Med. and Surg. Jour.* June, 1907.

IMPETIGO.

E. Graham Little, M.D., F.R.C.P.

Carrière[1] recommends the following treatment for impetigo of the scalp: The crusts are to be removed with a **Potato Starch Poultice**, boricated; gauze saturated in 10-volume **Hydrogen Peroxide** is then applied, and covered with rubber, and this dressing is renewed every twenty-four hours. Fractional doses of **Calomel** taken internally hasten the cure.

Whitfield[2] adopts the following measures: The scabs are soaked with **Kerosene Oil** (with due precaution against ignition), and the part is then dressed with hot antiseptic lotions (**Perchloride of Mercury** 1–4000, or lysol 1–200), or **White Precipitate** ointment (hydrarg. ammon. 20 gr. ung. paraffini ad 1 oz.).

REFERENCES.—[1] *Jour. de Méd. de Paris*, Jan. 1907, quoted by *N. Y. Med. Jour.* Mar. 6, 1907; [2] *Skin Diseases and their Treatment* (Arnold, 1907).

IMPOTENCE.

(*Vol.* 1902, *p.* 70)—**Yohimbin**, a very expensive drug, given in doses of $\frac{1}{15}$–$\frac{1}{6}$ gr. in aqueous solution ·2 to 1 per cent, is recommended as relieving functional impotence: it has no influence on paralytic cases. (*Vol.* 1902, *p* 46)—**Poehl's Spermine** has also been successfully employed as a hypodermic injection: 1 cc. of a 2 per cent solution of the hydrochloride was given daily for a week.

INFANT FEEDING.

Prof. G. F. Still, M.D., F.R.C.P.

Breast-Feeding.—Not unnecessarily, perhaps, do physicians reiterate their pleadings for the breast-feeding of infants. The present writer has recently published statistics showing that 96 per cent of infants who died from diarrhœa were being artificially fed. Harrington[1] refers to Tyson's estimate that three-fourths of the total infantile mortality in Great Britain occurs in hand-fed babies; and Helle's statistics, showing that in the city of Graz, out of 170 deaths due to diarrhœal disease in infancy, 117 were wholly bottle-fed, 48 were partly breast-fed, only four were entirely breast-fed (in one case the method of feeding was unknown).

Heubner[2] points out that the artificial nourishment of infants is attended with much greater difficulties during the first fortnight of life than at any other period, and that disturbances of nutrition are apt to be more severe during this period. He emphasizes also a very important practical point, that women whose breasts during the first week do not yield the quantity needed by the child, may in the course of time, by quiet waiting, become fully capable of nursing; and as long a period as four weeks may elapse without the child thriving at the mother's breast. The two things essential to promote the flow of milk are the stimulus of sucking and a good supply of nourishment to the mother. In the case of premature infants, feebleness may prevent the child from sucking ; under these circumstances a wet-nurse should be obtained, *with her child*. The vigorous child of the wet-nurse is then put to the breast of the newly-confined mother, while the premature infant is fed with milk drawn from the wet-nurse's breast. If this is impracticable, the mother's milk should be drawn off with a breast-pump as frequently as the child would under normal conditions take the breast, and when the infant is strong enough to suck it may be necessary still to feed it partially with milk drawn off by the pump. Heubner observed a case in which the breasts resumed secretion of milk six weeks after suspension of nursing. Even fevers in the mother do not always necessitate weaning the child. Heubner relates the case of a mother who suckled her child just after the febrile stage of scarlet fever was past, and another in which a mother with typhoid nursed her child throughout, and both mother and child did well ; but even when, as usual, it is advisable to stop suckling during some febrile disease, an attempt should be made to suckle again afterwards. Tuberculosis, according to Heubner, is the only absolute bar to suckling. He thinks that, although suckling might even improve the mother's health during its continuance, it is likely to cause exacerbation of the tuberculosis subsequently ; he does not mention the possible risk to the infant from the close contact with the mother. Whipham,[3] on the contrary, recognizes many conditions which may make suckling inadvisable : any serious complications during parturition—for instance, severe hæmorrhage, nephritis, convulsions, and septicæmia—contra-indicate suckling ; and again, when the mother is suffering from any chronic disease, nursing will only debilitate her without corresponding benefit to the child.

A mother's milk may, of course, not agree with her baby ; but often this is due to some temporary disturbance of the mother's health which may be remedied so that suckling may be continued. Tayler-Jones[4] mentions an instance in which the milk which was not agreeing was found to contain : Fat 6·4 per cent, sugar 7 per cent, proteid 1·05 per cent. The meat and milk of the mother's diet was limited, the amount of exercise was reduced, and after ten days the milk showed : Fat 3·4 per cent, sugar 7 per cent, proteid 1·35 per cent, and apparently the baby was decidedly better.

The reaction of human milk has been a matter of dispute in recent years. It has been asserted by some observers that human milk is found with the most delicate tests to be very faintly acid. Ramacci,[5] however, in a series of investigations, confirms the traditional teaching that it is always alkaline, but with variations in degree ; the alkalinity is greater in the morning than in the evening, and is increased towards the end of menstruation ; it is diminished slightly just after suckling.

The value of partial **Breast-Feeding** is not sufficiently realized ; indeed, there is a current notion that some harm results from " mixing the milks." Denny[6] has reported the excellent results which have been obtained in the Massachusetts Infant Asylum by giving infants with marasmic disorders even so little as 2 to 5 oz. of human milk daily, while the rest of the food was artificial. The wet-nurses employed for this purpose suckled their own children alternately with one or other of the hand-fed babies. He says it has been made probable by recent investigations that the superiority of mother's milk depends largely on substances which are of the nature of ferments, and the benefits derived from its use do not necessarily depend on the amount given. Even partial feeding with mother's milk, he thinks, may increase the bactericidal property of the blood, and so protect the infant from infections. Atrophic infants and those suffering from some infection often show prompt improvement with partial wet-nursing. Westcott[7] has used with success a system which might be called wet-nursing under difficulties. He has induced nursing women, who would not be willing to leave their own homes, to supply by pumping a small portion of their daily yield of milk; sometimes two, and in one case even three women, contributed in this way their mite of milk to make up a daily supply for an infant in danger of its life. The milk is to be collected with similar precautions to those used in milking cows: it is to be drawn into a sterile bottle and then kept upon ice till used. Westcott states that in one case he used human milk mixed with albumen-water, and later with peptonized cow's milk, where the supply of human milk was not sufficient to give it undiluted.

Cow's Milk and its Modification for Infant Feeding. Proteids.—Every medical man is accustomed to regard the difficulty of digesting cow's milk in infancy as due chiefly to the proteid, particularly to the curd-forming casein. Various expedients are in use for overcoming this difficulty. Some are mechanical devices, such as the thickening of the milk by the addition of barley-water, rice-water, or gelatin; some are chemical, such as the addition of sodium citrate to the milk; while one may be called physiological, namely, the predigestion of the milk by peptonizing agents. But now we are told by Walls, of Chicago, that this is all a mistake: the notion of proteid indigestibility is based on some crude test-tube experiments, and the misunderstanding of certain appearances in the baby's stools. The common whitish or yellowish lumps in infants' stools—the so-called curds—are not proteid, so he says, but fats or fatty soaps, or even mucus or clumps of bacteria. In hundreds of cases in which he has given fat-free milk to infants he has never found real curds in the stools. He attributes the difficulties of infant feeding mainly to the fat: and dilution of milk he would practise for the purpose of reducing the fat—not the proteid. Cow's milk proteid, he says, is easily digested and resists putrefaction, and in sterile, fat-free milk we have an unequalled therapeutic agent for the treatment of nutritional disturbance in infancy.

General experience certainly does not corroborate this writer's views, and the curd difficulty remains the great trouble in feeding infants with cow's milk. It is agreed now that **Sodium Citrate** is of considerable value in combating this difficulty, but there is difference of opinion as to how it acts. Aibinder, like other observers, has opposed the view of Poynton and Wright, who maintained that the effect of sodium citrate was due to the precipitation of lime by the sodium citrate so that the calcium cannot combine with the caseinogen to form the usual tough curd. Aibinder[8] found that in coagulation of milk by an acid, curd formation was not hindered at all by sodium citrate; in order for this salt to exercise its anti-coagulent effect it must act in the presence of gastric juice, so that it would seem as if the sodium citrate in some way checked the effect of the gastric juice. Sodium citrate, so far from precipitating the salts of lime, actually re-dissolves them when they have been precipitated by other means.

Undoubtedly the ideal method would be to give lactalbumin only or chiefly, but unfortunately whey, which has been advocated as approaching this ideal, contains so low a proportion of lactalbumin (or whey-proteids) that it is insufficient for prolonged use. Fry found ·88 per cent of proteid in the whey from a rich sample of skimmed milk, and asks, Is it possible to enrich the whey? He succeeded in doing this by a laboratory process of evaporation with a negative air-pressure of 60 cc. of mercury, and at a temperature below 68° C.; after three hours the whey was reduced to half its bulk, and the percentage of whey proteid had thus been raised, and was found to be 1·6 per cent. By further evaporation he raised the percentage of proteid to 3·52 per cent; subsequently he reduced the whey proteid to a dry powder. Theoretically, therefore, it is possible to obtain a whey which should contain the necessary quantities of proteid in a form extremely easy of digestion; but in practice this is not feasible, and if milk cannot be added to the whey on account of intolerance of curd, it is usual to add raw-meat juice to make up the deficiency of proteid.

A recent device for overcoming the curd difficulty is to prepare the milk with **Pegnin**, a ferment extracted from the stomach of calves. This substance, in the form of a powder, is added to the milk in the proportion of 1 per cent by weight. The milk should then be kept at a temperature of about 98° F., and the mixture shaken slightly; after a few minutes the milk should curdle; the curd should be fine small clots, which are far more easily digested by the stomach of the infant than are the large curds formed by the action of gastric juice. The same powder may be used for infants at the breast; two or three minutes before each feed a teaspoonful of the mother's milk is obtained, and given mixed with a pinch of pegnin. These methods Comby[9] has found useful in some cases of digestive difficulty in infancy, but not uniformly. He points out also that when the weight ceases to rise on this feeding the pegnin should be discontinued.

Fat Indigestion.—There can be no doubt that some infants suffer, not from the difficulty of curd digestion, but from that of fat digestion. Holt[10] has recently expressed his opinion that very great harm constantly results from the use of milk mixtures which contain too high a proportion of fat. Human milk, it should be remembered, contains on an average 3·5 to 4 per cent of fat. Holt says that some physicians in America deliberately give mixtures in which the proportion of fat is as high as even 8 or 10 per cent, and others give a high percentage in ignorance; for instance, he mentions a case in which the doctor supposed that the infant's milk-mixture contained 4 per cent of fat, but it was found that in reality the proportion was 7 per cent. Winters,[11] on the other hand, asserts that a baby fed on breast-milk which contains ·3 to 3·5 per cent of fat does badly, whereas one fed on a milk containing 4 to 6 per cent does well; in artificial feeding he says the children who are fed with a mixture containing 5 per cent of fat do best. Jacobi[12] regards even 4 per cent as too high a proportion, and says that infants will thrive and gain in weight on 2 per cent cow's-milk fat; he points out that this fat is not identical with the fat of human milk in its physical characters, and requires to be given in smaller quantities because it is not so readily digested. Interesting experimental confirmation of the evil results of excessive fat percentages comes from some observations on animals. Beach[13] found that to produce a gain of one pound in weight in calves, pigs, or lambs, more total solids must be present in the milk if it were rich than if it were poor in fat. In other words, excess of fat interferes with assimilation. In human milk the fat globules are said to be smaller than in cow's milk, and in some cows' milk the fat globules are larger than in others. In pigs, serious digestive disturbance occurred when they were fed with a rich milk in which the fat globules were large.

Acidified Milk: Buttermilk.—The traditional teaching that an infant's food should always be alkaline, because the mother's milk is alkaline, has of recent years been considerably modified by the success obtained with various acid preparations of milk. The best known of these is **Buttermilk.** Morse and Bowditch[14] have studied its effects as well as its properties. According to Salge's analysis, it contains ·5 to 1 per cent of fat, 3 to 3·5 per cent of sugar, and 2·5 to 2·7 per cent of proteids; so that, compared with human milk, buttermilk contains a very low proportion of fat, a low proportion of sugar, and a high percentage of proteid, in which the proportion of albumin is relatively greater than in fresh cow's milk. The casein is finely divided, and in the form of the lactate, which cannot be acted upon by rennet. It is very acid from the presence of lactic acid, and contains many bacteria, especially the lactic-acid forms. Raw buttermilk has a well-marked bactericidal action, killing typhoid, diphtheria, tubercle, and pyocyaneus bacilli in twenty-four hours. Heating buttermilk not only deprives it of its bactericidal effect, but also destroys the fine division of the casein and causes it to clot in large masses like ordinary sour milk; the clotting may be prevented by constant violent stirring or beating while it is being heated. Most of those who have used buttermilk have prepared it with flour and sugar, and heated it in one way or another. The proportions thus mixed are 10 to 25 grams of flour, 35 to 90 grams of cane sugar, and a litre of buttermilk. The mixture is cooked, with much stirring, until it comes to the boil in fifteen to twenty-five minutes, and then is allowed to boil up two or three times. As Morse and Bowditch point out, on general principles this is an irrational food for infants, but the results seem nevertheless to be good. Some, however, have found that acid buttermilk, after some weeks or months, causes disturbance of digestion. The lactic acid that is present in buttermilk should stimulate the secretion of the pancreas, favour intestinal antisepsis, and prevent putrefaction of the proteids ; and it has been shown that lactic acid can be given to infants in far larger quantity than is present in buttermilk without harmful effect. The acid in the food does not render the infant's stools acid ; they remain always alkaline. Experience shows that the best results are obtained from buttermilk in infantile atrophy, chronic indigestion, especially of intestinal nature, and after diarrhœa, whether digestive or bacterial in origin. It is useful also in cases where there is no gain in weight on other foods. It should not be given where there is severe vomiting, nor in the early stage of acute diarrhœa.

Very similar to the ordinary buttermilk are the preparations made from whole milk or skim milk by the addition of pure cultures of lactic-acid bacilli ; the advantage of such acidified milk is its freshness, and the freedom from the unknown bacterial contaminations which make commercial buttermilk so variable a food ; the disadvantage of it is the absence of the centrifugalizing process in its preparation, so that the casein is not finely divided as in ordinary buttermilk. Morse and Bowditch used in one series of cases an acidified milk prepared by adding a culture of lactic-acid bacilli, which had been growing in sterilized milk for twenty-four to thirty-six hours, to fresh milk. After adding this "starter," as it is technically described, the milk is kept at a temperature of 70° to 100° F. for twelve to eighteen hours ; if kept longer it becomes thick like gruel. Afterwards the acidified milk must either be kept on ice or pasteurized ; in the former case the bacteria are not destroyed ; in the latter of course they are.

The buttermilk used by these observers was a by-product from the manufacture of butter, from cream ripened with pure cultures of bacteria, and was from forty-eight to seventy-two hours old when given to the babies ; it was practically fat-free ; it was pasteurized for twenty minutes at 167 ° F., being beaten with an egg-beater meanwhile to prevent the formation of large curds.

The conclusions obtained were that milk mixtures, acidified and containing the bacteria still alive, were almost invariably taken well by normal babies and by those with chronic disorders of nutrition and digestion ; no harm resulted. They seemed to be more useful in cases of intestinal than in those of gastric indigestion ; as some infants did better when the acidified milk was pasteurized, it seems probable that the action of the bacteria on digestion is not of much importance. With the buttermilk, which as already mentioned was pasteurized, excellent results were obtained in cases of acute intestinal indigestion and infectious diarrhœa after the initial period of water diet and abstinence from all milk preparations; the character of the stools quickly improved, and some of the infants gained weight rapidly.

Strauch[15] has prepared buttermilk according to Teixeira's formula: One litre of fresh buttermilk is mixed with one to two tablespoonfuls of rice- or wheat-flour; the milk is added very gradually, so that lumps may not form; it is then heated slowly with constant stirring, and should come to the boil in fifteen to twenty minutes, after which 50 to 70 grams of sugar are added and the mixture is cooled and bottled. The addition of the flour prevents the formation of large curds during the heating, and raises the caloric value of the buttermilk. With this mixture good results were obtained in infants with malnutrition mostly due to chronic gastro-intestinal disturbance. He refers to Riether's observation that breast-fed babies who had not been gaining weight, showed a remarkable increase in weight and a great improvement when 1 to 4 dr. of buttermilk were administered just before each breast-feed.

Yet another formula for the preparation of buttermilk has been used by Judson and Clock:[16] the ingredients were, buttermilk 1 pint, a 6 to 9 per cent solution of cane sugar 8 oz., Robinson's patent barley ½ oz. The flour is made into a paste with a small quantity of the sugar solution; the buttermilk and the remainder of the sugar solution are then added to this paste with thorough mixing: the mixture is then heated to 155° F. for ten to fifteen minutes, with constant stirring, then cooled and kept on ice. With this preparation excellent results were obtained.

Starch.—On theoretical grounds the preparations of buttermilk which have been described above are unsuitable for early infancy, inasmuch as they contain starch; it is asserted, however, that the stools of the infants so fed usually do not show any starch residue. This raises the question how far the very young infant is capable of digesting starch. Corlette[17] states that the infant's parotid is actively amylolytic, and that the absence of amylolytic ferment in the pancreatic juice in early life is due to lack of adequate chemical stimulus. He estimates that barley-water as ordinarily prepared contains 2·03 per cent of starch. Some interesting observations on this point have recently been made by Lopez,[18] who fed twenty-five infants, aged from two to six months, on special diets, five infants being assigned to each of five different modes of feeding, containing respectively 1·5 per cent of starch, 2·5 per cent of starch, 2 per cent of starch, a food containing much converted starch but none unconverted, and a simple diluted milk. It was found that the digestion of those who were fed with the starchy diets was not impaired, and some whose digestion had previously been disturbed showed better digestion on this diet; those fed on diluted milk required special care to overcome some irregularities of digestion, while those fed on the diet containing much converted starch showed in about half the cases gastric and intestinal disturbance. Starch was found in small proportion in the fæces of all the starch-fed infants, but in so small amount that Lopez concludes that young infants can and do healthfully digest starch.

Eggs.—In cases where the proteids of milk cannot be assimilated, the white of egg has often been used. Midelton[19] recommends the following formula: White of egg, about 1 dr., cane sugar 5 gr., raw meat-juice 5 min., cod-liver oil emulsion 5 min., water to make one ounce. Last[20] states that in this mixture the proportions are approximately: proteid 1·3 per cent, carbohydrates 1 per cent, fat ·8 per cent, and suggests that sugar of milk 30 gr. (instead of cane sugar 5 gr.) and the yolk of egg 15 min. (instead of white of egg 5 min.) should be used, when the proportions would be proteid 1·6 per cent, carbohydrate 6 per cent, fat 2·4 per cent.

REFERENCES.—[1]*Pediatr.* July, 1907, p. 399; [2]*Med. Rec.* June 23, 1907; [3]*Pediatr.* Oct. 1906, p. 626; [4]*Arch. Ped.* July, 1906, p. 493; [5]*La Pediatria,* Jan. 1907, in *Brit. Jour. Child. Dis.* June, 1907, p. 263; [6]*Jour. Amer. Med. Assoc.* Dec. 8, 1906, in *Pediatr.* xix. p. 253; [7]*Ibid.* April 27, 1907, in *Pediatr.* xix. p. 507; [8]*La Clin. Infant.* 1905, 487 & 555, in *Pediatr.* xviii. p. 651; [9]*Presse Méd.* Dec. 22, 1906, p. 828; [10]*Arch. Ped.* Nov. 1906, p. 801; [11]*Ibid.* p. 812; [12]*Ibid.* p. 813; [13]*Ibid.* Jan. 1907, p. 17; [14]*Ibid.* Dec. 1906, p. 889; [15]*Med. Rec.* May 30, 1907; [16]*N. Y. Med. News,* April 30, 1907; [17]*Austral. Med. Gaz.* Jan. 1905, in *Arch. Ped.* Sept. 1906; [18]*Med. Rec.* Sept. 1906; [19]*Brit. Med. Jour.* June 1, 1907; [20]*Ibid.* June 29, 1907.

INFECTIOUS DISEASES, DIAGNOSIS OF.

E. W. Goodall, M.D.

G. A. Sutherland,[1] in a paper on the early diagnosis of infectious diseases by the recognition of the general involvement of the lymphatic glandular system, states that after having examined a considerable number of cases of acute infectious disease, he has arrived at the conclusion that the lymph glands (or nodes) are enlarged in these diseases. The enlargement varies with the length of the incubation period, being most marked in those with the longest period, except in whooping-cough. In *measles* the enlargement can be detected seven or eight days before the appearance of the rash; it is always present in this disease, and is most marked in the axilla. In *glandular fever* the glands are always enlarged. In *scarlet fever,* the milder the attack the less pronounced is the glandular enlargement. In an average attack the axillary and inguinal glands are most affected. The enlargement was found in all the cases examined. In *chicken-pox* enlargement was not always present in the neck, but was usually present in the axillæ and groins. In *rubella* it was always found, as it was also in *mumps.* In *whooping-cough* the enlargement was not observed till the spasmodic stage. In *diphtheria* the axillary and inguinal glands were most affected; the enlargement is most constant between the ages of 4 and 15; antitoxin appeared to cause a speedy resolution; there was no relation between the severity of the attack and the enlargement. Only six or seven cases of *erysipelas* were examined, and the enlargement was present in five. In *vaccination* the axillary and inguinal glands were enlarged, especially on the side of the lesion.

REFERENCE.—[1]*Brit. Med. Jour.* Dec. 15, 1906.

INFLUENZA.

Robt. Hutchison, M.D.

TREATMENT.—The following excellent summary of the treatment of this condition is abstracted from *The Practitioner*:[1]

As soon as it is recognized that a patient is suffering from influenza, isolation should be insisted upon: young children and old persons should be guarded against all possible sources of infection, the latter being especially liable to serious complications and sequelæ. The patient should be rigidly confined to a warm bed, and kept quiet until the temperature becomes normal, and the sick room should be thoroughly well ventilated. J. F. Goodhart says, "To go to bed, to take plenty of light liquid nourishment, and some **Liquor Ammonii Acetatis** every few hours, are sufficient, in most cases, to induce a quick recovery." Thoroughly disinfect any secretion which may come from the nose and the bronchial tubes, by the use of carbolic acid, 1-20. The mouth and nose should be systematically and frequently disinfected by antiseptic inhalations, such as oil of **Eucalyptus** or **Thymol**, and by sprays and washes.

Sir J. W. Moore recommends the local use of **Quinine** and **Resorcin**. A good antiseptic gargle may be made by suspending 1 gr. of sulphate of quinine in a wineglassful of cold water. The following is a useful mouth and nasal spray:—

℞ Resorcin. gr. lxxx | Aq. Rosæ ℥viiss
Glycerin. ʒss |
Misce.

At the outset, the bowels should be opened by a saline purge, such as the effervescing **Citrate of Magnesia** or **Sulphate of Soda**, or a small dose of **Calomel**; at night 5 to 10 gr. of **Dover's Powder** may be given, and the following draught:—

℞ Salicin. gr. xij | Aq. Camph. ad ℥j
Liq. Ammon. Acetat. ʒiv |
Ft. haust.

The patient should be given a supporting diet at first, milk, and "egg-albumen water," the latter prepared by whipping up the whites of three or four eggs, to which may be added a pint of cold water and some cinnamon as a flavouring agent: egg-flip may be given later. If a stimulant is required, white wine whey may be used with equal parts of unflavoured egg-albumen water. Beef-tea and chicken-broth may be also given separately, or mixed in equal quantities. Later, eggs and chicken, sweetbreads, fish, and finally roast joints; but in drawing up a bill of fare for a fastidious patient, we must remember that one man's food is another man's poison. If the pulse is weak, stimulants are indicated; and good port wine and champagne are the best. Special symptoms, which may be referred to either the *respiratory* or *gastro-intestinal tracts*, or *the central* or *peripheral nervous system*, may arise, which usually call for special medicinal treatment. Under these varying conditions, the following prescriptions may be found to benefit the patients :—

In the early stage of the disease :—

℞	Quin. Salicyl.	gr. xvj	Tinct. Aurant.	℥j
	Acid. Nitr. dil.	♏xvj	Syr. Tolu.	℥ss
			Aq. dest.	ad ℥viij

Misce. Ft. Mist. Two tablespoonfuls three times daily.

Burney Yeo says that the remedy most deserving of confidence, after two or three days of salicin treatment, is **Quinine.** It seems to be really an antitoxin in this disease. Professor Tessier compares its action in influenza with that of sodium salicylate in acute rheumatism, and regards it as the most valuable medicine we possess. If quinine is persevered with, there will be much less cardiac weakness, and fewer of the serious sequelæ which so frequently supervene.

The most efficacious way of giving quinine is to dissolve 1 to 3 gr. of sulphate of quinine in 10 to 20 gr. of citric acid, and add the solution to a mixture of ammonium carbonate and potassium bicarbonate in sufficient quantity to rather more than neutralize the citric acid, the dose to be repeated every three or four hours. If profuse and exhausting sweatings occur in the afternoons or evenings, 5 gr. more of quinine sulphate, dissolved in lemon-juice, should be administered about five p.m.

For a patient unable to take quinine, Packard recommends as an efficient substitute :—

℞	Strychn. Sulphat.	gr. $\frac{1}{48}$	Cinchonidin. Salicyl.	gr. ij

Misce. Ft. pil. One pill every four hours.

To relieve the bronchial catarrh which is so often troublesome, the following will prove useful :—

℞	Ammon. Chlor.	ʒij	Ext. Glycyrrh. Liq.	
	Tinct. Sumbul	℥vj	Sp. Ammon. Arom.	āā ℥iv
			Aq. Chlorof.	ad ℥xij

Misce. Ft. mist. Two tablespoonfuls three times daily.

Forchheimer states that the ordinary bronchitis is satisfactorily controlled by the following :—

℞	Sod. Benzoat.	℥ij	Aq. Menth. Pip.	℥iv

Misce. Ft. mist. One tablespoonful every two hours.

If the cough is hard and troublesome, with a scanty, tenacious expectoration, the following may be prescribed :—

℞	Apomorph. Hydrochlor.	gr. j	Syr. Aurant.	℥iv
	Morph. Hydrochlor.	gr. $\frac{3}{4}$	Aq.	ad ℥iv
	Acid. Hydrochlor. dil.	℥ss		

Misce. Ft. mist. One or two teaspoonfuls at a time.

Simson recommends, to relieve the cough :—

R	Liq. Morph. Hydrochlor.	ʒj	Tinct. Limon.	ʒj
	Acid. Hydrobrom. dil	ʒj	Syr.	ad ℥iss
	Chlorof.	♏iij		

Misce. Ft. syrup. A teaspoonful when necessary.

Sir William Whitla gives the following to relieve influenzal pneumonia :—

R	Ammon. Carb.	ʒiv	Sp. Ammon. Arom.	ʒiv
	Tinct. Cinchon.	℥iss	Decoct. Cinchon.	ad ℥xij

Misce. Ft. mist. Two tablespoonfuls with a tablespoonful of lemon-juice in effervescence every four hours.

At the same time, cardiac stimulants, such as brandy, strychnine, combined with digitalis and oxygen inhalations, are required.

Cardiac asthenia often appears during an attack, and often continues after it has passed off ; it calls for special treatment. Prolonged rest in bed in a well-ventilated room, or, if the weather is warm, on a couch in the open air, is essential, and the following may be given :—

R	Quin. Sulphat.	gr. j	Tinct. Nucis Vom.	♏v
	Acid. Sulphur. dil.	♏iij	Magnes. Sulph.	gr. xx
	Tinct. Ferri Perchlor.	♏v	Inf. Quass.	ad ℥j

Misce. Ft. mist. Two tablespoonfuls three times daily.

For the severe gastric pain and vomiting which sometimes occur during an attack of influenza, Huchard recommends the following :—

R	Sod. Bicarb.		Bismuth. Salicyl.	āā gr. v
	Magnes.			

Misce. Ft. pulv. Three to five powders daily.

Hydrocyanic acid should not be prescribed for the purpose of relieving vomiting, as it is somewhat depressing to the heart.

For the intense headache and pains in the limbs and back, Sir William Whitla prescribes antipyrin 5 gr., with citrate of caffeine 2½ gr., to be taken at once, followed by half the dose every hour, for six or eight doses : this, he says, invariably gives speedy relief. One of the most troublesome symptoms of influenza is persistent and severe headache. This may be relieved by the following :—

R	Phenazon.	gr. x	Tinct. Card. Co.	ʒss
	Caffein.	gr. ij	Aq. dest.	ad ℥iss
	Sp. Ammon. Arom.	ʒss		

Three tablespoonfuls when required.

If neuralgia is severe, the following draught may be prescribed :—

R	Caffein. Citrat.	gr. j	Mucilag. Acac.	ʒj
	Phenacetin.	gr. vj	Aq. Menth. Pip.	ad ℥j

Misce. Ft. haust.

Or

R	Phenazon.	gr. xv	Aq. Chlorof.	ad ℥ij
	Tinct. Gelsem.	♏xx		

Misce. Ft. haustus. One-fourth part every second or third hour until the pain ceases.

For the nasal catarrh which frequently accompanies influenza, the following may be tried :—

℞	Acid. Boric.	gr. xxv	Bismuth. Oxychlor.	gr. xxv
	Menthol	gr. xxx	Lycopod.	ʒiv

Misce. The snuff to be used frequently.

Or,

℞	Menthol	ʒj	Paraffin. Liq.	ad ℥j

Misce. This may be locally applied in each nostril with a good camel-hair brush.

During convalescence, Sir J. W. Moore recommends :—

℞	Liq. Strych. Hydrochlor.	ʒss	Tinct. Aurant.	ʒvj
	Acid. Hydrochlor. dil.	ʒiss	Aq. Chlorof.	℥vij

Misce. Ft. mist. One-eighth part twice or thrice a day, with or after meals.

Or,

℞	Liq. Strych. Hydrochlor.	ʒss	Tinct. Quinin.	ʒvj
	Acid. Phosph. dil.	℥iss	Aq. Chlorof.	℥vij

Misce. Ft. mist. One-eighth part twice daily.

He also suggests that it is advisable to interrupt the taking of either of the above mixtures for a few days, should they cause headaches or spasmodic pains, due to the accumulation of strychnine.

The late Sir W. Broadbent believed strongly in quinine as a remedy for influenza. "My usual prescription," he says,[2] "is 1 dr. of ammoniated quinine and 2 dr. of liquor ammoniæ acetatis every hour for three hours, and then every four hours. In the fulminating attacks, in which the patient has become comatose, hydrobromate of quinine, given hypodermically in large doses, has completely relieved the unconsciousness.

"As a prophylactic, I early ordered 2 gr. of quinine every morning during the prevalence of the epidemic, and the results appeared to be good. Of course, patients who were taking quinine did occasionally get influenza, but I have known very many instances in which this dose has made a complete difference in the patient's liability to infection, and even in the general mode of life.

"I have, moreover, had opportunities of obtaining extraordinary evidence of its protective power. In a large public school, it was ordered to be taken every morning. Some of the boys in the school were home boarders, and it was found that, while the boarders at the school took the quinine in the presence of a master every morning, there were scarcely any cases of influenza among them, although the home boarders suffered nearly as much as before.

"In a large girls' school near London, the same thing was ordered, and the girls and mistresses took their morning dose, but the servants were forgotten. The result was that scarcely any girl or mistress suffered, while the servants were all down with influenza."

After an experience extending over sixteen years, Carne Ross[3] advocates very strongly the use of **Cinnamon Oil** for influenza.

REFERENCES.—[1]*Pract.* Jan. 1907 ; [2]*Ibid.* ; [3]*Lancet,* Nov. 3, 1906.

INGROWING TOENAIL.

(*Vol.* 1893, *p.* 503)—Puerckhauer recommends softening of the nail with a warm 40 per cent solution of **Caustic Potash**; the offending part can then be scraped away till it is as thin as tissue paper, and can be lifted up and cut free from the rest of the nail.

INSECT BITES.

(*Vol.* 1898, *p.* 329)—**Ichthyol**, pure, or in a paste with an equal part of lanolin, may be used as a local application. To prevent bites apply Acetic Ether, 5 parts; Eucalyptol, 10 parts; Cologne Water, 10 parts; Tincture of Pyrethrum, 50 parts; diluted with four or five times its bulk of water. (*Vol.* 1899, *p.* 68)—**Thiol** may be used instead of ichthyol, as it has the advantage of being odourless.

INSOMNIA.

(*Vol.* 1900, *p.* 284)—For insomnia at the menopause: ℞ Potassii Bromidi, gr. xx; Tinct. Sumbul, ʒss; Tinct. Lupuli, ʒss; Aq. Camph., ad ℥j; thrice daily. When it is due to over-work, order mental rest, change of air and scene, and a warm bath followed by a glass of whisky and water. (*Vol.* 1901, *p.* 25)—Chloretone, 6–20 gr., followed by a draught of milk, may be of use in cardiac and senile cases of insomnia. (*Vol.* 1902, *p.* 25)—In similar cases, **Dormiol**, in capsules containing from 6 to 30 min., is also recommended.

Three safe hypnotics for ordinary use when opium is contra-indicated are: **Paraldehyde**, ʒss–ʒij, **Chloralamide**, gr. x–xxx, and **Trional**, gr. xv–xxx. The first should be given with Syrup of Orange, ʒij, Aq. ad ℥j or ℥ij: the second with Aq. Chloroformi, ℥j; and the last in milk or in a tablespoonful of whisky with warm water.

INTESTINES, DISEASES OF.

Rutherford Morison, F.R.C.S.

Diseases of the Colon.—F. S. Kidd[1] remarks on three cases of chronic pericolitis; they illustrate a form of *hyperplastic tuberculous pericolitis* due to a peculiar infection with the tubercle bacillus. The importance of this disease is considerable, for most of such cases are mistaken for malignant disease. These cases help to establish the following points: (1) There arises a peculiar form of localized chronic hyperplastic inflammation in the submucous, muscular, and subserous coats of the bowel, which may lead to intestinal obstruction and its consequences, and which affects the mucous and serous layers to but a small extent; (2) This is in all probability due to a localized infection of the wall of the gut with an attenuated form of the tubercle bacillus; (3) That this form of inflammation is very liable to be mistaken for carcinoma or sarcoma, either at operation or at necropsy; (4) By careful examination with the naked eye this form of disease can often be distinguished from a malignant growth at the operation, when once it is realized that such disease exists and the appearance it presents is borne in mind; (5) It can always be recognized with certainty by microscopical examination, which will prove of advantage in prognosis and treatment. Two types of the hyperplastic form of intestinal tuberculosis, presenting different appearances according to the position of the main collection of new tissue, must be distinguished. They are the more common "submucous" and the rarer "subserous" type. The chief naked-eye distinction between this form of disease and malignant growth in the bowel is, that in subserous tuberculosis the chief thickening is in the subserous layer; in malignant disease the thickening is submucous. Ulceration is always present in malignant disease, and the ulcers are characteristic. In this form it is not.

Causes, Sequelæ, and Treatment of Pericolic Inflammation.—D'Arcy Power[2] says that pericolic inflammation is not uncommon and might give trouble in diagnosis. It is an inflammation of the connective tissue in immediate relation with any part of the colon except the appendix. It may end in resolution, or become chronic or suppurate. Constipation, the injury caused by a foreign body, ulcers of the bowel, pyæmia, and in two cases injury from outside appeared to be causes. The symptoms are at first obscure. The onset of marked symptoms in every case appears to be sudden, and is characterized by acute pain, vomiting, and loss of appetite. Deep-seated tenderness is very marked, especially on rectal examination. The temperature and pulse are quickened, and there are other signs of inflammation. In chronic cases the thickening of the intestinal coats is apt to lead to an erroneous diagnosis of malignant disease, and it explains many of the cases reported as carcinoma cured by a nostrum or by the lapse of time.

The treatment consists in an attempt to prevent the inflammation from becoming chronic, and in the early opening of any abscess which may have formed.

Varieties of Pericolic Inflammation.—W. H. Newton[3] says pericolitis is not limited to any one region of the colon, but may occur anywhere along the course of the large intestine. By far the commonest site is in connection with the descending colon, and especially low down near the commencement of the sigmoid flexure. Constipation is the chief cause. It may act by setting up an inflammation of the wall of the intestine or by causing small abrasions in the mucous membrane; or, most likely of all, by disposing to sacculi or stercoral pouches. Next come perforation of the intestine by small foreign bodies, injuries received from without, and leakage from typhoid, stercoral, or other intestinal ulcers. Another large group of cases are secondary to inflammation originating in neighbouring viscera. A third group are pyæmic in origin.

The symptoms depend upon the severity of the disease. In the mildest cases the pain and tenderness disappear when the constipation is relieved. In more severe cases adhesions may give rise to intestinal obstruction, or the thickening of the intestinal wall may lead to a diagnosis of cancer. In certain cases localized peritonitis leads to abscess formation, with or without general symptoms of sepsis, or in others general peritonitis may be the result.

Ulcerative Colitis.—Arthur Latham and Francis Jaffrey[4] report the following interesting case:—

The patient, a man aged 48, on admission was obviously very ill. There was some tenderness in the right iliac fossa, but no rigidity or dullness. Examination with the sigmoidoscope showed no ulceration of the rectum or pelvic colon. The stools, consisting chiefly of blood mixed with mucus and pus, amounted to fourteen in the twenty-four hours. Injections and internal treatment, with rest in bed and attention to diet, failed to effect improvement.

Appendicostomy was done on March 30th, but was not a surgical success, because the small size of the appendix prevented proper irrigation of the colon through it. On May 5th the cæcum was exposed, and opened next day. The mucous membrane was much thickened, and the slightest touch caused it to bleed. Antiseptic irrigation of the colon through the cæcostomy was instituted. They say the result of this treatment was truly wonderful, for in less than a fortnight practically all the symptoms had disappeared. The cæcostomy opening was closed by operation, and finally healed on October 9th. The cure continued.

Causes of Colitis, with Special Reference to Surgical Treatment.—J. P. Lockhart Mummery[5] says a great number of names have been given to colitis, but the essential symptom is the presence of excess of mucus in the stools in the form of casts (complete or broken up), shreds, or large glairy masses. In addition, bleeding, intestinal sand, diarrhœa and acute attacks of abdominal pain are common accompanying symptoms. In quite a large proportion of cases definite local lesions, sufficient to explain the symptoms, can be seen in the bowel with the electric **Sigmoidoscope.** The lesions in many cases are confined to the lower part of the sigmoid and rectum, positions in which stagnation and pressure of fæces are most felt. The cæcum and the sigmoid flexure being the most dependent parts of the large bowel, are most frequently diseased.

Symptoms.—In almost all cases constipation has been an antecedent. Diarrhœa is the symptom for which advice is most frequently sought. Bleeding was present in twenty-two of thirty-six cases. It did not occur in two cases of new growth. Enough mucus was passed in all to attract the patient's attention to it. Casts were seen in two cases due to malignant disease in the bowel. Enterospasm was present in one case, the sigmoid forming during a pain a hard tumour about 2 in. in length. It could have been mistaken for a malignant growth had it not disappeared as the pain ceased. The examination requires special preparation and great care, but the introduction of the sigmoidoscope is not painful. In the majority of cases (66 per cent) it showed that the colitis was due to some chronic inflammatory lesion, and was not a neurosis. In seven cases ulcers were present. In the greater number they were shallow and numerous. In seven cases cancer of the bowel was the cause of the symptoms. Multiple adenomata of the large intestine also cause the symptoms of colitis. It may be impossible to diagnose these growths without the sigmoidoscope. The causes may lie outside of the bowel, pericolitis and retroflexed uterus being examples. Appendicitis may cause colitis by: (1) Spread of inflammation; (2) Formation of crippling adhesions; (3) Discharge of septic matter into colon. Removal of the appendix is likely to cure a colitis. A floating kidney and an abdominal aneurysm have been recorded as causes of colitis. In only six of the cases was no local lesion discovered to account for the disease, and it seems probable that if the whole of the colon could have been examined such a lesion would have been found.

Treatment.—The most important factor in the treatment is to ascertain the cause. In the inflammatory conditions **Rest** in bed, **Irrigation** with antiseptic douches by a skilful nurse, and careful **Diet** are needed. In malignant cases, operation where possible. When the appendix is thickened and tender it should be excised. Ulcers may require temporary **Colostomy,** but only when local applications made through the sigmoidoscope have failed. **Appendicostomy** allows the patient to irrigate his own colon easily. When no local cause can be found and medical treatment has failed, exploratory **Laparotomy** and the correction of any discoverable defect are indicated. **Ileosigmoidostomy** is advisable in a few exceptional cases when there is extensive ulceration and adhesions, and the patients are unlikely to get permanently well; but it should not be lightly undertaken.

Surgical Treatment of Chronic Colitis.—Ingersoll Olmsted[6] says obstinate cases of colitis, mucous and ulcerative, which have failed to respond to internal medication, are now referred to the surgeon for relief. The causes are still imperfectly understood, but are many, and should be sought for. The literature proves that obstinate cases of colitis may be benefited by any form of operation which permits either rest to, or better cleansing of, the large bowel. Thus left inguinal colostomy, cæcostomy, and appendicostomy have all had favourable records. In future cases the author would examine the appendix first, and be guided by circumstances as to further action.

Non-cancerous Inflammatory New Growths.—Cavaillon and Bardin,[7] in an historical survey, point out that with the advance of visceral surgery surgeons have learnt to distinguish a group of such conditions. They were originally astonished to obtain cures after simple laparotomy in cases where the tumour was judged inoperable at operation, and also that when removed they were histologically not cancer. Of twenty-four cases of inflammatory tumours of the pelvic colon analysed, four were syphilitic, seven tuberculous, and thirteen simple inflammatory. During operation the presence of a diffuse induration in a sigmoid tumour should suggest an inflammatory lesion as against cancer ; so should marked peritoneal reaction and adherent thickened omentum with purulent foci in it. It is very difficult to distinguish the pericolic abscess with inflammation of the sigmoid from a cancer of the sigmoid with perineoplastic suppuration.

Tuberculous Tumours of the sigmoid can occur as single lesions, or with other strictures or tumours. Sclerosis of the fatty tissue around, and large tuberculous glands in, the mesocolon suggest tubercle. Syphilitic tumours also occur. They constitute a sclerotic thickening of the walls, and histologically the bands of fibrous tissue are arranged concentrically round vessels. Round each of these tumours a perisigmoiditis and abscess can occur from a mixed infection. The symptoms may resemble those of cancer with obstruction, or cancer with an abscess. They are always grave lesions, and may cause death by obstruction or perforation.

Acute obstruction should be treated by **Cæcostomy,** perforation by **Laparotomy** and suture, or by utilizing the opening for a **Colostomy,** localized suppuration by **Drainage,** waiting for abatement of the active inflammation before proceeding further. In purely inflammatory lesions simple laparotomy followed by medical treatment often suffices for cure.

In tuberculous and syphilitic strictures, spontaneous cure does not occur. Though resection and anastomosis is ideal, the authors incline to **Temporary Colostomy,** which may cause retrogression of the tumour, or if not, can aid in the performance of **Cholectomy** by several stages.

Ileocæcal Tuberculosis.—Tomita[8] reports five interesting cases of ileocæcal tuberculosis. The patients ranged in age from 21 to 32. Two gave a family history of tuberculosis. In all, the disease developed gradually, with symptoms of intestinal derangement. In two the symptoms followed trauma. The stools were loose or constipated, the two conditions often varying, and after a long period the picture of a chronic obstruction developed, with a palpable tumour in the iliac fossa, in at least one instance discovered by the patient himself. The tumours were about the size of a fist, elastic, slightly tender, and somewhat movable. In two cases there were enlarged tuberculous mesenteric glands as well. All the patients did well after operation except one, who died as the result of necrosis, probably from the pressure of a Murphy button. Even a patient from whom the mass could not be entirely removed on account of adhesions, was greatly improved. Of special interest clinically is the statement that no tuberculous lesion could be found in any other part of the body. Since the time of Billroth these ileocæcal tuberculous tumours have been grouped as a special clinical entity, and there is a large mass of literature contributed to the subject. They simulate very closely the scar-tissue masses following appendicitis and cæcal carcinoma, and mistakes in diagnosis are frequent. Operation with extirpation of the mass is followed by good results. In eighty-five cases collected by Conrath there were eleven deaths.

Henri Hartmann[9] says that up to fifteen years ago the surgical forms of ileocæcal tuberculosis were unknown. It was then recognized that some cases diagnosed as cancer were due to tubercle. The cæcum is more often the seat of tuberculosis than any other part of the intestine. Ileocæcal tuberculosis is much more amenable to surgical treatment than that which attacks other parts of the bowel. It appears under two forms, the entero-peritoneal, with ulcers, caseation, and adhesions; and the hyperplastic, with thickening and stricture. It is rare to meet with it at any age other than between 20 and 40. Some of the cases, by causing peritoneal reaction, simulate appendicitis, even to the formation of abscesses and fistulæ; in others intestinal obstruction and a tumour suggest cancer.

If the disease is left alone it is fatal by the progress of cachexia, by a secondary pulmonary tuberculosis, or by a diffuse tuberculosis of the intestines or of the peritoneum.

The treatment of ileocæcal tuberculosis is to open the abdomen. In some cases, when there are subserous nodules with glandular enlargement and no evidence of lesions in the mucous membrane, this has been followed by cure. In the majority a larger operation is necessary.

The best is to excise the end of the ileum, cæcum, and a portion of the ascending colon, the glands in the ileocolic angle, to close the ends of colon and ileum, and do a lateral anastomosis (*Fig.* 41). Where resection is dangerous, the exclusion of the diseased part is indicated[9]; unilateral exclusion is best (*Fig.* 42).

Julius Richter[10] concludes from three cases presenting the usual signs of chronic obstruction and hard bossy tumour, that a chronic non-specific inflammation is the primary factor. Tuberculous ulcers were found in his cases, but he thinks these were accidental and grafted on to a diseased organ.

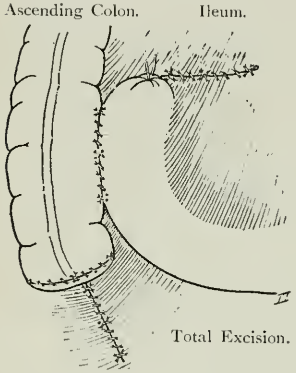


Fig. 41.—Lateral Anastomosis.

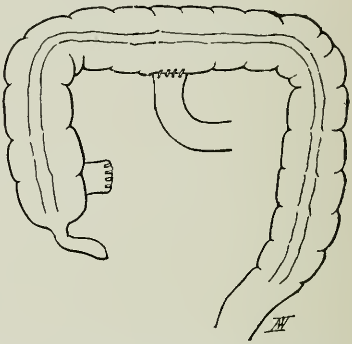


Fig. 42.—For Inoperable Disease. Unilateral Exclusion with end-to-end Anastomosis.

Mimicry of Malignant Disease of the Large Intestine.—B. G. A. Moynihan[11] read a paper before the Clinical Society of London on six cases upon which he had operated within the last few years. In each, a diagnosis of malignant disease of the intestine had been made at the operation or before, yet the diagnosis was incorrect. Tumours of the large intestine resulting from tubercle were well known; it was not so generally known that inflammatory tumours presenting all the clinical appearances of cancer existed in all parts of the large intestine.

K. W. Monsarrat[12] records two cases of chronic inflammatory affections of the sigmoid flexure simulating malignant disease.

The first was a man aged 44. His illness commenced suddenly six months before admission, with pain, vomiting, and constipation of eight days' duration. Since then he had pain and flatulent distention. On admission, in the left lower abdomen a firm, tender, movable mass, the size of an apple, was felt. He had obstinate constipation, but no blood in the stools. A diagnosis of carcinoma of the sigmoid was made, and the abdomen was opened. The mass was drawn out after separating a few adhesions, and was found to involve the middle of the sigmoid loop. Nothing in its appearance suggested anything but cancer, and it was excised. After excision the mass was found to consist of cicatrix and inflammatory induration only, causing a stricture of the bowel. Recovery.

The second patient was a man 47 years old. For a year he had constipation, latterly alternating constipation and diarrhœa, with blood in the stools and tenesmus. The desire to go to stool was frequent, and the amount passed small and fœtid. On admission his abdomen was not distended. In the left iliac region a firm swelling, 5 or 6 in. in length and 2 in. diameter, ran obliquely inwards and downwards from the level of the iliac crest into the pelvis. It was not tender. Operation showed, as was expected, a rather short sigmoid loop converted into a rigid tube and bound down by adhesions. Colostomy was performed with the object of resting the bowel. A speculum introduced after the operation showed areas of shallow ulceration in the bowel, which soon healed.

Intestinal Obstruction.—Max Einhorn[13] draws attention to the possibility of localizing an obstruction by bismuth and X-ray examination. He has succeeded in doing this experimentally in the case of frogs with acute obstruction, and once in a case of stricture of the colon with chronic obstruction in man. In the case of the man, a bismuth feed and an enema of bismuth both showed the location of a stricture. The diagnosis of acute obstruction is based on the absence of stool and flatus in conjunction with symptoms of collapse, tympanitis, abdominal pains, and vomiting of intestinal contents. If the initial pain is localized it usually points to the seat of the disease. Early palpation may find the affected spot much more sensitive to pressure than others. An inflated intestinal coil may be found above the seat of obstruction (Von Wahl's sign). A stiffening of the bowel or peristaltic restlessness may be observed above the affected place. Possibly watching the peristaltic movements will indicate whether the lesion is in the small or the large intestine. Violent symptoms and marked indicanuria at the commencement, point to small intestines. If the lesion is low down in the large intestine, a small quantity of water injected may return. It is important to determine the variety of ileus, as this decides the treatment. In dynamic ileus usually no surgical treatment is required. In incarceration (intussusception) surgical treatment is desirable ; the sooner the better. Cases of obturation and volvulus permit medical treatment.

Volvulus of the entire Small Intestine, Cæcum, and Ascending Colon.—Jonathan Hutchinson, jun.,[14] says that these cases of volvulus, though few in number, are of special interest. By the term complete volvulus is meant an axial rotation of all the intestines that can possibly be twisted, i.e., the whole of the intestine supplied by the superior mesenteric artery, which is the axis on which the twist takes place (*See Figs.* 43, 44). The invariable condition, without which complete volvulus cannot occur, is the floating condition of cæcum and ascending colon due to a congenital arrest of development which extends through the whole mesentery as far as the second part of the duodenum.

Of nine cases of complete volvulus, seven were males, two females, five were children or young adults, and two were elderly. In nine out of ten recorded cases the rotation seems to have occurred from right to left, in only one in the reverse direction.

In its development the intestine is always described as rotating from *left to right* on the axis of the superior mesenteric artery. It is of interest to note that in all but one of the recorded cases of complete volvulus the rotation was really a continuation of this movement: but inasmuch as the cæcum passes behind the mesentery to the left side of the abdomen, it has been referred to in this paper as a *right to left* rotation. The importance of early operation is obvious, and so complex and puzzling is this form of volvulus that only a very free incision and lifting all the intestines forwards will enable the surgeon to diagnose and relieve the condition. During the operation the most important sign is the presence of the distended cæcum on the

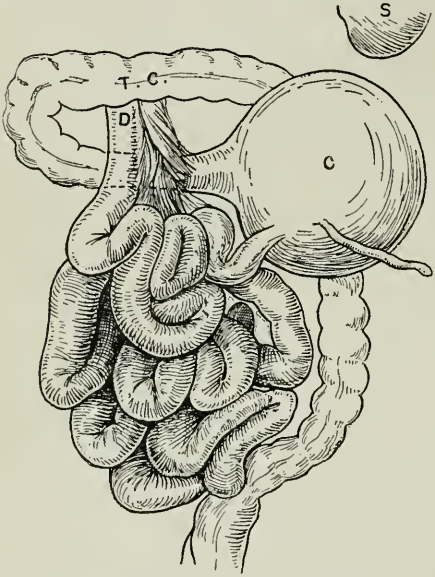


Fig. 43.—Complete Volvulus. The greatly distended cæcum (C) has passed under the mesentery of the small intestine, and now lies near the spleen (S). D, The abnormally placed duodenum. T.C. Transverse colon.

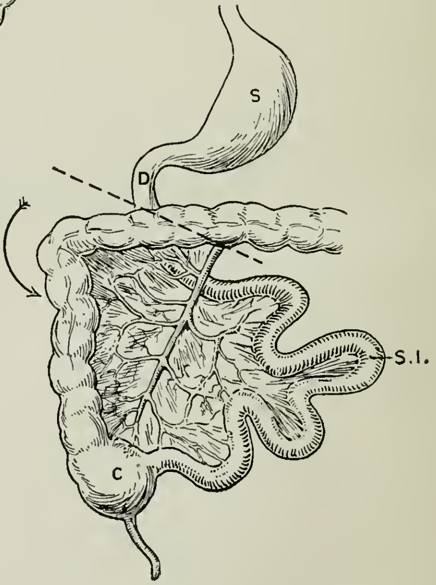


Fig. 44.—Diagram of the parts involved in Complete Volvulus (i.e., those below the dotted line). S, Stomach. S.i. Small intestine. C, Cæcum. The arrow shows the direction of the twist.

left side of the abdomen, although this is not absolutely constant. Of the cases recorded, only two, including one of the author's, recovered.

Resection of the Sigmoid Flexure.—John J. McGrath[15] reports a case of resection of the sigmoid flexure, primarily for the purpose of calling attention to a simple method of end-to-end intestinal anastomosis. The accompanying figures (45, 46, 47) explain the method.

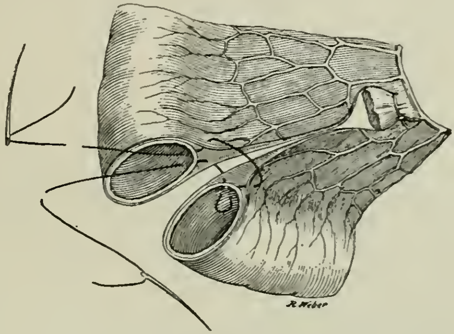


Fig. 45.—The mesenteric suture has been introduced. When drawn tight and tied, it obliterates the "dead space" seen between the diverging layers of the mesentery; it also opposes the serous layers.

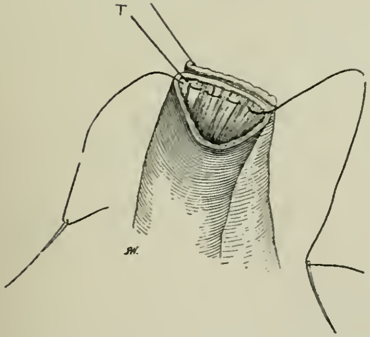


Fig. 46.—The edges of the two ends of the gut have been joined from the mesenteric suture as far as the tractor, T.

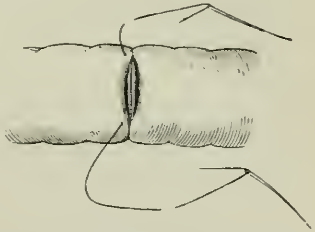


Fig. 47.—The gut has been joined for more than two-thirds of its circumference, and the sutures have been brought out through the edges of the gut for the purpose of completing the anastomosis with the Lembert stitch.

Multiple Internal Diverticula (*Invagination ?*) *of the Small Intestine.*—A. A. Scot Skirving[16] records a case which appeared to be unique. In operating on the strangulated hernia of a man aged 33, he found several depressions on the convexity of the strangulated loop, which was about 9 in. long. The depressions (six in number) were situated at about equal distances from one another, and exploration with the probe showed that they led into closed tubular cul-de-sacs, varying from 1 to 2 in. long, which entered obliquely into the lumen of the bowel. They could not be reduced, and the bowel was returned in this condition without ill effect, as the patient made a normal recovery. Only the portion of intestine in the hernial sac appeared to be so affected, as above and below it was normal. No explanation of the condition can be offered.

Tumours of the Mesentery.—With report of a case of fibroma, L. G. Bowers[17] says innocent tumours are very rare, and of these cysts are the most common. Lipomata are more frequent than other solid simple growths. Fibromata may grow as large as an adult's head, or larger. Nothing is known as to their etiology. The only diagnostic sign of any importance is their free mobility. Operations up to date have resulted in a large mortality.

A female, aged 15, in November, 1904, missed a menstrual period, and complained of nausea, especially in the afternoon and evening. She gradually lost flesh, and in the following March she noticed an enlargement on the left side of the abdomen on a level with the umbilicus. [We regard this position as suggestive of a tumour in the small intestine or its mesentery.—R. M.] Later, she went to a hospital, and a tumour was discovered, and she was prepared for operation. Under the anæsthetic no tumour could be found, and it was assumed that a cyst had ruptured. When the patient became fully conscious the tumour reappeared. [We have had this experience, and regard the sign as indicating tumour in connection with the small intestine, In our case bimanual examination discovered the tumour in the pelvis.—R. M.] Six weeks later she came under the author's care. The tumour was ovoid, its greatest diameter transverse to the abdomen, and its lower border level with the umbilicus. There seemed to be an indistinct fluctuation. The patient was emaciated, pale, and had not menstruated for seven months. Previous to this illness she was robust. She was troubled with constipation, had cramp-like pains in the left side, was slightly tender on pressure, and had a little gaseous distention, probably due to the obstruction by pressure in the abdomen.

Under anæsthesia the tumour disappeared, but exploration discovered it in the lesser omental cavity. There were very firm adhesions to the middle of the posterior wall of the stomach, and it was attached by a short pedicle to the transverse mesocolon from which it seemed to spring. It appeared to fluctuate, but puncture showed it to be solid. Its removal, which was accomplished after ligature and division of the stomach and mesocolic attachments and peeling off the remainder, was accompanied by extreme hæmorrhage, which could only be arrested by packing. Recovery was uninterrupted, and health was soon completely restored.

The tumour was 4 in. long, 3. in. wide, and 1½ in. thick. It was very flabby, as though it contained fluid. This seems to be a characteristic of fibromas of the mesentery, such as microscopical examination showed this to be.

This paper is followed by an abstract of published cases.

References.—[1]*Lancet*, Jan. 6, 1907; [2]*Brit. Med. Jour.* Nov. 8, 1906; [3]*Med. Chron.* April, 1907; [4]*Med. Press*, May 8, 1907; [5]*Lancet*, June 15, 1907; [6]*Brit. Med. Jour.* Nov. 10, 1906; [7]*Gaz. d. Hôp.* Feb. 5, 1907; [8]*Wien. klin. Woch.* 1906, xix, 1581; [9]*Brit. Med. Jour.* April 13, 1907; [10]*Beitr. z. Pathol. Anat.*; [11]*Med. Press*, Dec. 19, 1906; [12]*Brit. Med. Jour.* June 28, 1907; [13]*N.Y. Med. Jour.* May 18, 1907; [14]*Clin. Jour.* June 16, 1907; [15]*Med. Rec.* Feb. 2, 1907; [16]*Brit. Med. Jour.* Feb. 2, 1907; [17]*Ann. Surg.* Dec. 1906.

IRIS. (*See* Eye Injuries; and Eye in Relation to General Disease.)

JAUNDICE, CATARRHAL.

(*Vol.* 1904, *p.* 457)—*Dietetic.* Prescribe a **Milk Diet** in the early stages, skimming the milk if it be very fat. During the stages of recovery, allow a more liberal diet, still excluding fats, eggs, and alcohol. *Medicinal:* Give **Mercurial** and **Saline Purgatives**; for instance, Calomel, gr. iij, every other night, Sodii Sulphat., ʒj, Aq. Menth. Pip., ad ℥j, twice daily. Enemata of cold water may also be given in the morning. **Sodium Salicylate,** in 15-gr. doses, is useful in protracted cases, for rendering the bile less viscid.

JOINT DISEASE, SYPHILITIC.

Priestley Leech, M.D., F.R.C.S.

Bruno Bosse[1] describes the histology and radiography of a late form of hereditary syphilitic joint disease. One case was a gummatous synovitis, without any definite specific alteration in the bones, in a girl five years old; the second was of the same character in a boy nine years old, but there were also pronounced changes in the diaphyses and epiphyses; in the third case, a boy thirteen years old, there was a gummatous process in both femoral epiphyses, but none in the synovial membrane. The conclusions to which he comes are: (1) There is histologically a specific synovitis without or with the formation of gummata in late hereditary syphilis. (2) Generally this is accompanied by bony disease of the epiphyses. There are cases, however, in which, even with the help of radiography, no bony disease can be found. (3) Radiography shows the presence of epiphyseal osteochondritis as well as osteal and periosteal specific processes in late hereditary syphilis similar to the same processes as we know them in the tertiary stage of acquired syphilis and in the early forms of congenital specific disease. (4) Radiographic investigation is needed to explain the numerous manifestations of disease in the hollow bones. (5) A differential diagnosis in all points between rachitis and the late forms of hereditary syphilis cannot at present be made.

The article is well illustrated with reproductions of X-ray photographs of histological sections.

REFERENCE.—[1]*Beit. z. klin. Chir.* Bd. li. H. 1.

KALA-AZAR.

J. W. W. Stephens, M.D.

L. Rogers,[1] in the second Milroy Lecture, describes the features of the disease under the following heads:

Family Distribution.—It is essentially a family disease, e.g., of twenty successive Assamese patients, twelve of their near relatives had died of the disease. This is true also of Europeans, e.g., one-third of a series of cases had relatives in hospital suffering from the disease during a period of five years. It is a noteworthy fact that among a certain number of Europeans in Assam known to cohabit with native women, *none* escaped infection. [Here the direct transmission by sexual intercourse, as in dourine, and partly also in sleeping sickness, is suggested.—J. W. W. S.]

Age, Sex Incidence.—Husband and wife are commonly infected one after the other; in fact it is exceptional for one to escape. The most striking fact is the number of children attacked.

Types of Fever.—The fever is of very long duration, showing alternating, remittent, and intermittent types, for many months. In the early stages of the disease the fever is often of a double remittent type, i.e., a marked daily double or triple rise of temperature which, in the author's experience, is not seen in typhoid. Another characteristic type is that of a low, continued type of pyrexia, the temperature falling below 101° F., but not varying more than 2° in the twenty-four hours. Even when the fever is high for long periods, there is a characteristic absence of severe distress, or typhoid symptoms.

Spleen.—In ninety-five consecutive cases admitted to hospital, the spleen reached to the navel, or beyond, in 80 per cent of cases; in 10 per cent to the anterior superior spine of the ileum.

Liver.—In the early stages any marked degree of enlargement is uncommon, but later the organ shows definite increase in from about 50 to 90 per cent of cases.

Blood Changes.—The leucopenia is intense—500 to 1000 per mm.—a condition almost diagnostic of kala-azar. The ratio of white to red corpuscles may be 1–1500 up to 1–3000, whereas in malaria the ratio is about 1–750, and very rarely, if ever, 1–1000. There is also said by some observers to be an increase in the percentage of large mononuclear leucocytes. [But others do not find this.—J. W. W. S.]

Complications.—The disease is commonly terminated by some inflammatory complication, e.g., dysentery, cancrum oris, pneumonia.

The Distribution of the Parasite in the Body.—The parasite is what is now known as *Leishmania donovani*. It exists most numerously in the spleen, the bone-marrow, and the liver, occasionally also in the mesenteric glands, and rarely in ulcers in the intestine. It occurs in large endothelial or macrophagic cells of the spleen and bone-marrow, and multiplies to such an extent that the cells eventually rupture, and so the parasites get into the blood-vessels. In fact, if looked for carefully in several slides they may in 75 per cent of cases be found in the peripheral blood, a point of great practical importance, as it makes spleen puncture (a somewhat dangerous procedure in these cases) unnecessary.

Development of the Parasite outside the Body.—The author succeeded in cultivating the parasite outside the body by adding blood got by splenic puncture to sterile salt solution containing citrate of soda, and kept at about 22° C. The result was a great increase in size of the parasite and the development of flagellated forms (*Herpetomonas*). The development is also much more rapid if the cultures are slightly acidified with citric acid. The author and Patton, of Madras, consider that this cycle normally takes place in the Indian bed-bug (*Cimex macrocephalus*), and, in fact, that the bed-bug transmits the disease.

TREATMENT.—The author considers that **Quinine** in large doses—60 to 90 grs. a day for long periods—has a distinctly beneficial action.

Prophylaxis.—Segregation has given very good results, viz., the removal of all the healthy people out of infected "lines" to houses on a new site. If the bed-bug is proved to be the transmitter, then action will have to be taken against this pest.

F. P. Mackie[2] has failed to transmit the disease to the following animals :—Monkey (*M. sinicus*), goat, rabbit, rat, guinea-pig, pigeon. He used an emulsion of spleen containing abundance of parasites, and made the injections in a variety of ways, including feeding.

REFERENCES.—[1]*Lancet*, Mar. 1907 ; [2]*Brit. Med Jour.* June 8, 1907.

KELOID.

(Radcliffe Crocker, *Diseases of Skin*, *p.* 879, 1903 *Ed.*)—Keloid will react after excision, unless a wide margin of normal tissue be removed also. Verneuil has cured cases by pressure with an **Elastic Bandage.** **Cocaine** may be injected into the tumour to relieve pain. **Thiosinamine** (10 per cent in equal parts of glycerin and water) injected into the tumour, and **X-Ray** applications, are the most reliable methods. **Electrolysis** has been employed.

KIDNEY, SURGERY OF.

E. Hurry Fenwick, F.R.C.S.

Mobile Kidney.—Stanmore Bishop[1] proposes a very suggestive and original method of fixing the right kidney. Sound progress in the technique of nephropexy is greatly needed, and if his contention that the operation he has advised is safe and fairly successful, it will be a welcome addition to a difficult section of urinary surgery.

Operations through the posterior abdominal wall for mobile kidney, he points out, are not followed by uniformly satisfactory results. This is due to :

1. Fixation of the kidney at an improper level, since only a part of it can be seen through an incision in the posterior abdominal wall. It is therefore impossible to be accurately certain that the contents of the renal veins are unimpeded in their return, or that there is no kinking left in the line of the ureter and renal pelvis. Either of these conditions will entirely invalidate the good effects intended by the operation.

2. The great probability of the kidney again freeing itself from the restraints imposed upon its movement, due to :

(*a*) The fact that the sutures usually applied tend to cut themselves out, because the whole weight of the kidney is brought to bear upon them at a most favourable angle, and the sutures themselves are acting upon and tending to cut through tissues on the renal side which are possessed of little resistive power ;

(*b*) The previous excursions of the kidney have hollowed out below it a cavity in the post-peritoneal connective tissue always ready to receive it should it again become loose. By the operation ordinarily practised no attempt is made to close this.

(*c*) Longyear's observations show that there exists a connection between the colon and the kidney by means of a band formed by the lower end of the *lig. susp. renis*, which is incorporated below with the posterior band of the gut. When the ascending colon contracts upon its contents, it pulls upon this band in a downward direction ; the pull of the descending colon, on the contrary, is exerted in an upward direction. This explains the disproportion of cases (80 per cent Goodhart, 84·8 per cent Landau) occurring on the right side. By none of the recognized operations is this pull neutralized.

The operation devised is intended to meet these various indications. (1) The kidney is reached from the front, so that a good view of it as a whole is obtained, its proper position ascertained, and the final result can be demonstrated ; (2) The inferior cavity is closed ; (3) The tug of the renocolic band is transferred from the movable kidney to the immovable posterior abdominal wall ; (4) The support is applied to the kidney below, where it will be most effective.

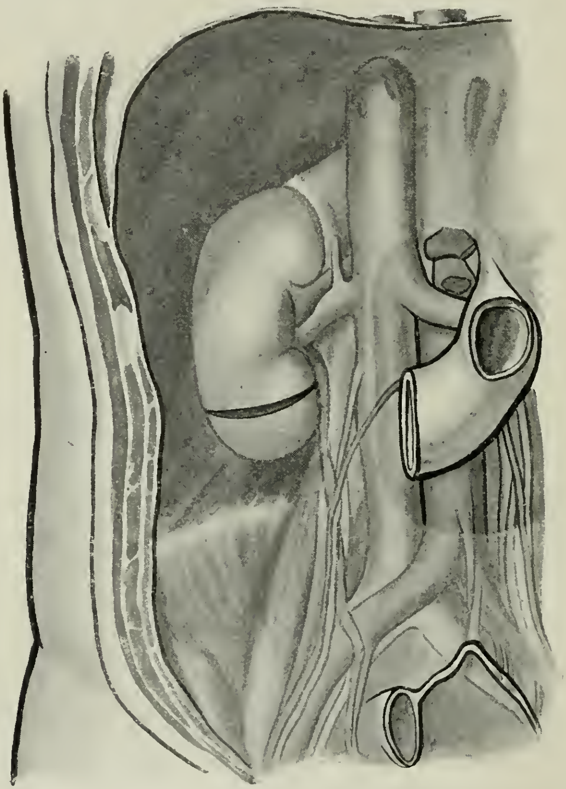


Fig. 48.—Kidney exposed. Posterior Peritoneum divided over its lower third.

The technique of the operation is : (1) Morison's incision through the abdominal wall in the right upper quadrant, laying freely open the peritoneal cavity ; (2) Replacement of the kidney in its normal position, so that its vessels are straight and the renal pelvis in its true line with the ureter ; (3) Division of the peritoneum covering the kidney transversely over its lower third (*Fig.* 48) ; (4) Separation of a portion of the anterior capsule at the lower third of the kidney, which still remains firmly attached posteriorly, so that this loosened portion either lies rucked up around the lower and inner pole, or is lightly tacked down to the fascia behind (*Fig.* 49); (5) Replacement and suture of the divided peritoneum; (6) The passage of sutures directly backwards through peritoneum, detached capsule, and posterior abdominal wall in such a way as to form a chain of sutures extending from immediately below the renal pelvis downwards along the internal and inferior edge of the kidney, and as far round the external edge as may

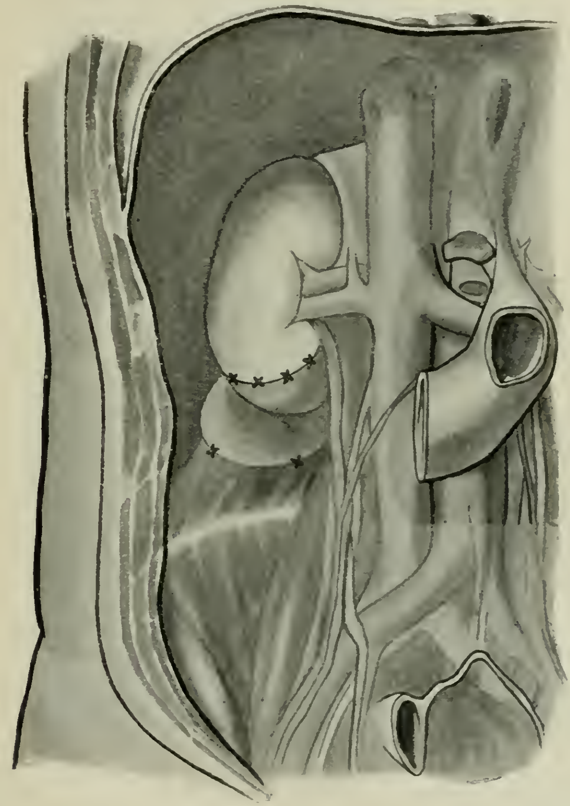


Fig. 49.—Proper Renal Capsule turned down and fixed by two sutures. Posterior Peritoneum reunited over Kidney.

be deemed advisable. These sutures are tied behind after division of the skin and the subcutaneous fat over the muscular layer. These sutures must necessarily (*a*) Close the lower cavity; (*b*) Support the kidney; (*c*) Pin the fibres of Longyear's ligament to the posterior abdominal wall, and so transfer their drag away from the kidney. (7) Effect a closure of the abdominal wall by tier suture.

Ligature of Renal Vessels.—Holt[2] records a successful case of ligature of the renal vessels for a persistent urinary fistula in the loin. The fistula resulted from an accident, and four attempts were made to perform nephrectomy. They were all abandoned on account of hæmorrhage. The renal vessels were then ligatured by the transperitoneal method. The urine ceased to flow on the fifth day, and on the fifty-seventh day healing was completed. The patient was well two years later. Holt thinks this operation is indicated where, on account of scar tissue, nephrectomy is dangerous and where the other kidney is healthy.

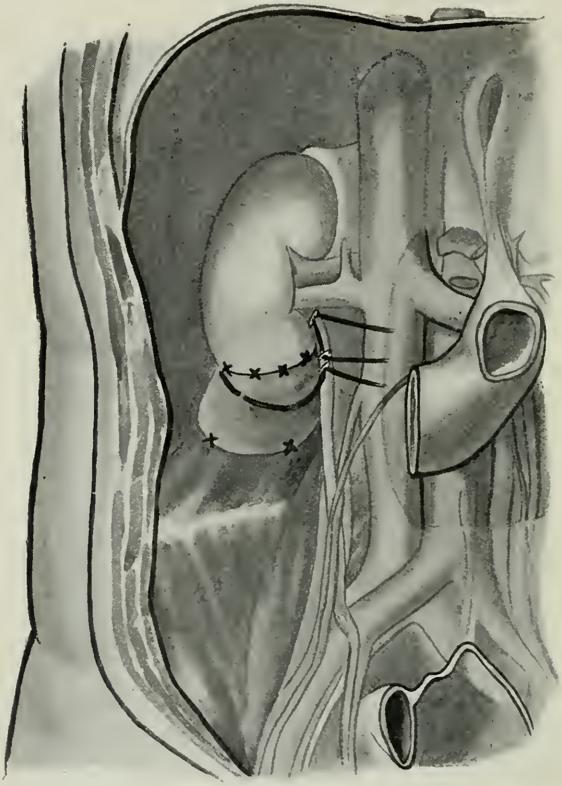


Fig 50.—The first stitch is shown with the needles *in situ* on the inner side of the kidney, immediately below the ureteric insertion. The thread is seen as it would lie after the passage of the needles, and when drawn tight. The ends of the threads are, of course, much longer than shown, to allow of their passage through the muscular wall and their being tied behind. Of the second loop, the upper thread has not been drawn through.

Hydronephrosis.—Watson Cheyne[3] discusses a modification of the operation for this condition. A piece of the dilated pelvis with the ureter is excised, and then grafted into a corresponding aperture at the lower part of the pelvis. The upper hole is then sutured. The orifice of the ureter is also enlarged. He reports two cases, both of which were successful.

Duval and Gregoine [1] read a paper on this condition. Stone, kinking of the ureter over an abnormal artery, movable kidney, only cause hydronephrosis when associated with some congenital malformation. This malformation consists of the persistence of some valves found in the normal developing ureter. The treatment consists of either **Nephrectomy** or a **Plastic Operation.** Nephrectomy should be reserved for those cases where there is an entire destruction of the renal tissue, or where it is impossible to perform a conservative operation.

Bazy insists on the importance of prolapse of the uterus and inflammatory conditions of the pelvis in causing hydronephrosis.

Pyonephrosis.—Greaves [5] reports a case of pyonephrosis with a stone blocking the ureter. The pus contained a pure culture of the typhoid bacillus.

Malignant Growth.—Cheeseman [6] reports removal of a hypernephroma weighing 4¼ lb. from an infant aged 20 months.

Tuberculosis of the Kidney.—Cowie [7] insists on the importance of cytologic examination of urine sediment. If the sediment contains a large number of mononuclear leucocytes it is suggestive of tubercle, and the bacilli should be very carefully sought for.

Anuria.—Greene [8] calls attention to cases of latent anuria. In these cases, he says, calculi may be present in both kidneys and no obvious symptoms present; the urine is diminished and of low specific gravity. Suddenly suppression occurs, and before the question of treatment can be fairly considered the patient dies. In the treatment of calculous anuria, if the kidneys (or a kidney) are fairly sound, three or four days may be spent in treatment to dislodge the stone before operation is undertaken. **Purging, Opium,** and **Belladonna** in generous and repeated doses are advisable. If this treatment fails (and he thinks it usually, will) operative treatment should be undertaken. Nephrostomy should be done, and an attempt made to remove the stone at a later operation.

Thomson Walker, in the Hunterian Lecture, [9] states that cryoscopy of the urine is of little use in estimating renal function on account of its inconstancy, but he considers **Cryoscopy of the Blood** is of value. The excretion of methylene blue is of some value in estimating the renal function, and must be judged by a comparison with the information obtained from the symptoms and the examination of the urine. He asserts that the test "is one which is more trustworthy than the quantitative examination of the urea, or the general symptoms of renal inadequacy, and this is especially the case in the more severe grades of kidney disease, and appears to me to form a valuable addition to the chemical methods of estimation of the renal function."

As aids to estimation of the function of one kidney, Walker [10] gives the following: (1) Cystoscopic examination of the ureteric orifices; (2) Chromato-cystoscopy, using indigo carmine; (3) Examination of the urine obtained from each kidney. This last includes: (*a*) Cryoscopy of the two urines; (*b*) Methylene blue tests for each kidney; (*c*) Phloridzin glycosuria tests for each kidney. All of these methods are of value, and some idea of the functionating power of each kidney can be ascertained by employing them.

The Clinical Signs of Renal Tumours of Suprarenal Origin.—Hypernephrome (hypernephroma of the kidney), according to Crispolti,[11] usually affects only one kidney, and is most frequently met with in adults. It runs a rapid course, which may be described as having three stages: prodromal, complete development, and terminal, the last stage being reached only in unoperated patients. Each of these three periods presents a group of symptoms which supervene suddenly in the form of attacks lasting from two to four days. Each attack is followed by a period of quiescence, during which the patient feels in the best of health if the case be recent, and of comparative comfort when at a more advanced stage. These intervals may last from a few days to several months.

During the prodromal period the patient is suddenly seized by severe pain in the loin, well-marked on the affected side, and accompanied by a sensation of weight in the corresponding region. This is followed, a few hours later, by hæmaturia. The urine, usually abundant, is slightly bloody to begin with, but as the attacks recur the proportion of blood increases. Analysis reveals a certain quantity of albumin. A slight sensation of weight persists between the attacks on the affected side, though the urine becomes quite normal.

At the stage of full development intolerable pain comes on suddenly in the lumbar region, being most marked on the side of the lesion, and this holds good in respect of the radiations of the pain into the back and abdomen. The pain is worst along the track of the ureter, especially opposite its lowest segment. The abdominal walls are tense. These symptoms last for from four to eight hours, with tenesmus and the frequent passage of clear limpid urine, which is chemically and microscopically normal. At the expiration of this period there is copious hæmaturia immediately following the cessation of the pain. The urinary secretion becomes scanty, and at first contains blood-clots which are obviously of ureteric origin. They vary in length, and while passing along the ureter the passage of urine is temporarily arrested. Micturition is frequent, and is accompanied by a feeling of extreme desire. Examination shows from 20 to 60 cgrams of albumin per litre.

Between the end of one attack and the onset of the next the patient experiences comparative relief, though he may still complain of weight on the affected side and tenderness in the lumbar region of that side. The pain radiates in some instances very markedly towards the back. The urinary troubles subside, micturition is painless and no longer frequent, and the amount, microscopical appearances, and chemical reaction of the urine are normal, save perhaps for the presence of a trace of albumin.

The terminal stage is characterized by the persistence of the hæmaturia, and the presence of constant pain in the lumbar region, most marked on the affected side. The pain radiates into the back and down the same side of the abdomen, being as a rule most severe along the track of the ureter. Micturition is frequent, with scalding. From time to time these objective and subjective symptoms undergo acute exacerbations, and the hæmaturia increases in amount, short ureteral clots making their appearance in the urine.

Crispolti insists on the very great importance of thoroughly grasping the symptomatology of these renal tumours of suprarenal origin. As a rule only one kidney is affected, so that an operation, if done without undue delay, may save the patient's life.

The Cortical Incision for Stone.—Professor Marwedel[12] calls attention to the occasional dangerous secondary hæmorrhage which occurs in the longitudinal cortical incision of the kidney in nephrolithotomy, and suggests a median **Transverse** (cross) **Incision.** He brings forward five successful cases, and asserts the stones were removed with very little hæmorrhage, and that the pelvis is more easily and quickly reached. The healing is excellent. He recommends the cross incision for all uncomplicated cases of kidney stone with acid urine or with only slight infection of the kidney pelvis.

REFERENCES.—[1]*Proc. Gynæcol. Soc.* 1907; [2]*Lancet,* June 9, 1907; [3]*Ibid.* July 6, 1907; [4]*Gaz. d. Hôp.* Oct. 9, 1906; [5]*Brit. Med. Jour.* July 13, 1907; [6]*Ann. Surg.* Jan. 1907; [7]*Amer. Med.* Jan. 1907; [8]*Pract.* Oct. 1906; [9]*Lancet,* Mar. 16, 1907; [10]*Ibid.* Mar. 23, 1907; [11]*Monde Méd.* No. 269, Nov. 1907, p. 337; *Centr. f. Chir.* 1907, No. 30, p. 875.

KNEE-JOINT, SEPTIC ARTHRITIS OF. (*See also* PASSIVE HYPERÆMIA, *p.* 71.)

Priestley Leech, M.D., F.R.C.S.

The transverse incision into the knee when this is the seat of a septic inflammation which has not yielded to incision and drainage is well known, and Peck[1] recommends a further development. He says this method should be reserved for severe cases only, where efforts at drainage and irrigation have failed to check the process and amputation is the only alternative. The technique is as follows: A transverse curved incision crosses the patellar ligament to the posterior border of the condyles, and is prolonged upwards so as to form a shallow U. The patellar ligament, the anterior capsule, and both crucial and lateral ligaments are divided, leaving the posterior ligament alone intact, and allowing separation of the bones and opening widely the posterior recesses of the joint. Lateral cuts are made through the walls of the quadriceps bursa, so as to allow the complete turning back of the anterior flap, including the patella and all tissues down to the joint; this flap is turned back and secured by a suture to the skin of the anterior aspect of the thigh, thus opening the subcrural bursa widely to its apex. The entire joint is packed with gauze moistened with a weak solution of bichloride or formalin, and the limb is fixed in flexion on a suitable splint at an angle of 60° to 80°. After the inflammation has gone the joint must be resected, as flexion is impossible owing to contraction of hamstrings and probable dislocation backwards of the tibia. The after-treatment is of great importance, as cleanliness is difficult to maintain, and care must be taken that there is no pressure on the popliteal behind. Three to eight weeks are usually required for suppuration to cease and the joint and wound surfaces to become sufficiently clean to permit of straightening of the limb or secondary resection. In certain cases this method may be well worth attempting.

REFERENCE.—[1]*Ann. Surg.* Mar. 1907.

LABOUR.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Artificial Dilatation of the Cervix.—A consideration of the justifiability and means of dilating the cervix in order to hasten delivery at full term was discussed at the British Medical Association meeting in 1907.[1] Jardine stated that it had been estimated that if labour was prolonged beyond twenty-four hours the danger was increased fourfold : it was clearly, therefore, the duty of the obstetrician to prevent this by hastening delivery. Again, in certain emergencies, such as accidental hæmorrhage or eclampsia, delivery was called for in the interests of the patient. He did not think that instrumental dilators, such as Bossi's, were used as much now as a year or so ago, owing to their liability to cause severe cervical lacerations. The instrument is so powerful that none but a practitioner both skilful and careful can use it with safety.

Of the various cutting methods which have culminated in Dührssen's vaginal Cæsarean section or vaginal hysterotomy, Jardine speaks first of multiple cervical incisions. This operation is only advisable after the cervix has been completely taken up, and Jardine very wisely insists that the incisions, four in number, should lie in the oblique axis of the pelvis, thus avoiding the uterine vessels. Dührssen's vaginal Cæsarean section is advised in these cases when the cervix is still long. It is an operation requiring expert skill and suitable surroundings, and can never become popular with the bulk of practitioners. It has been advised for placenta prævia, but in Jardine's opinion is unjustified. With this we are in entire agreement.

Whitridge Williams,[2] in a very interesting paper, details his experience in the first 5000 labours in the obstetrical department of the Johns Hopkins Hospital. He comes to the following conclusions : (1) That the bougie method of inducing labour is the safest, but that the length of time taken is a drawback ; (2) Manual dilatation, he considers, is only useful when the cervix has been taken up. It is difficult and harmful when applied to an undilated cervix ; (3) He does not approve of the use of steel dilators ; (4) When haste is not essential, the bag of Champetier de Ribes is safe and satisfactory ; (5) He has performed vaginal Cæsarean section on four occasions, and is inclined to think it a good operation when prompt emptying of the uterus is called for.

Blacker[3] reviews the results obtained by the use of Bossi's dilator in 500 cases, including some of his own. He considers that even an unobliterated vaginal cervix may be efficiently dilated if the instrument is carefully used on the lines laid down by its inventor. The tears which have occurred in many instances were due, not to the dilator, but to the means subsequently adopted to deliver the child. The dilator should, however, only be used where rapid evacuation of the uterus is urgently indicated, on account of the liability to laceration. If used indiscriminately, serious injuries to the uterus are sure to follow.

Pubiotomy and Symphysectomy.—Growing interest has been manifested in these operative procedures, and a large number of obstetricians, chiefly German, have published their experiences. In this country a certain number of cases are on record, and it is undoubtedly being cautiously adopted by certain authorities. At the German Gynæcological Congress it was made the subject of an exhaustive debate. Zweifel prefers subcutaneous symphyseotomy to pubiotomy as being easier to perform and less likely to be complicated by severe bleeding. Moreover, by leaving a yielding scar, it makes subsequent labours more easy. The scope of these operations is limited to contracted pelvis with conjugates not less than 6·5 cm. Zweifel, after cutting through the major portion of the pubic cartilage with a probe-pointed knife, completes the division with a Gigli's saw. He then leaves the labour to the natural forces. He has never seen vaginal lacerations where this has been done. They may, however, be produced by rapid forceps delivery immediately after the section. Much less force is required to separate the bones after symphyseotomy than after pubiotomy. He remarks on the large number of cases of phlegmasia that follow this operation, but he has found no permanent weakness of the pelvic ring result from the division of the symphysis. He says the operation is indicated in flat and generally contracted pelves with a true conjugate between 6·5 and 8 cm., the child being alive, good uterine contractions present, and there being no fever. The infantile mortality is less in symphyseotomy than in induction for the same class of case.

In the debate that followed, opinions appear about equally divided as to the relative values of symphyseotomy and pubiotomy (or hebosteotomy). Both operations are claimed to permanently enlarge the pelvis. One speaker pointed out that the bladder rarely lies in the exact middle line, and that its direction should therefore be ascertained by a sound before beginning the operation.

The mortality amongst the cases quoted at this meeting was about 4 per cent. The morbidity was considerably higher. As to the relative merits of the two procedures, it would appear to the impartial reader that either gives fairly good results when performed properly. It does not appear that the interpubic cartilage is less capable of firm union after division than the bone. The principal risks appear to be: (1) Sepsis—much diminished since the introduction of the subcutaneous operations; (2) Severe vaginal lacerations—these can be avoided by not allowing the bones to separate widely and suddenly, and by leaving the case to nature to complete; (3) Subsequent prolapse of the pelvic floor, also probably the result of hasty extraction: and (4) Permanent weakness of the pelvic ring. This would seem to depend chiefly on septic changes occurring at the seat of division. According to Zweifel even the pubic cartilage heals strongly if asepsis is maintained.

That the operation will ever become popular here we much doubt. Where the patient's condition is good and the surrounding circumstances are favourable, we should much prefer Cæsarean section, the mortality and morbidity of which, in the hands of expert operators, are much less. Where, however, the patient's condition is not satisfactory, her surroundings are bad, and the practitioner is not expert, craniotomy is the simplest and safest course to pursue. Pubiotomy or symphyseotomy would appear to be indicated in those cases where Cæsarean section is contra-indicated owing to some local abdominal condition, or where the patient refuses to undergo that operation, and the birth of a live child is a matter of importance.

Of the two operations, pubiotomy is held in the highest repute by the majority of those qualified to judge. The subcutaneous method should be adopted, either by Doderlein's or Bumm's technique. Doderlein encircles the bone from above downwards by means of a special needle which subsequently carries the saw round the bone. He makes two small incisions, one just above the pubes and one in the greater labium. Bumm also has a special needle, but uses one incision only.

Post-partum Hæmorrhage.—Stanmore Bishop[4] has revived the method of checking post-partum hæmorrhage by compressing the aorta as practised by Ramsbotham and Baudelocque the younger, in and before 1835. He insists that this is the only rational treatment of the condition, and warmly condemns the current teaching on this head. Herman,[5] replying, as warmly supports the more modern methods. The former author considers that the first duty of the practitioner is to check the hæmorrhage, and says that this is effected most readily by the method he advocates. Having stopped the bleeding, measures directed to the uterus may be undertaken. Herman points out that the best treatment of post-partum hæmorrhage is preventive, and consists in the proper management of the second stage beforehand. If the uterus is too exhausted to retract, pressure should be made directly on that organ and not on the aorta. The discussion evoked a considerable degree of feeling on both sides.

We are in complete agreement with Herman. There is no case of post-partum hæmorrhage which cannot be at once controlled by bimanual compression provided the uterus has been previously emptied of its contained blood-clot by the hand. It is the failure of practitioners to appreciate the necessity of *emptying the uterus before you compress it* that is responsible for failures. Compression of the aorta in many bad cases of post-partum hæmorrhage would have to be made through the whole thickness of the uterus, which is distended with blood and blood-clot far above the umbilicus. We have seen a case in which a patient bled to death into her uterus without a single drop of blood escaping from the vagina—an example of *totally concealed post-partum hæmorrhage*. All cases are at least *partially concealed*: that is to say, a very large proportion of the blood lost remains in the uterus. Unless the hand is at once introduced, the full appreciation of the gravity of the condition will be missed, and bimanual compression of the uterus will not be able to be efficiently applied. This treatment fulfils the acknowledged surgical axiom that a bleeding point should be locally secured whenever possible. Compression of the aorta is equivalent to compressing the main trunk of an artery for bleeding from an easily accessible branch. The rules for the treatment of post-partum hæmorrhage are extremely simple: (1) Place the left hand on the uterus from the abdomen, and with the right hand immediately empty the organ; (2) Withdraw the right hand into the vagina and make bimanual compression; (3) The bleeding being now controlled, have prepared and administer at once a large intra-uterine douche at 120° F. Whilst this is being done, or before if possible, inject 20 min. of ergotin deeply into the outer side of the leg. These means will be found to control every case of post-partum hæmorrhage from the placental site. If bleeding goes on in spite of them, it is coming either from a rupture of the cervix or of the uterus itself, or from some laceration of the vagina, perineum, or vulva.

REFERENCES.—[1]*Brit. Med. Jour.* Aug. 24, 1907; [2]*Surg. Gyn. and Obst.* Sept. 1906, in *Jour. Obst. and Gyn. Brit. Emp.* Mar. 1907; [3]*Trans. Med. Soc. Lond.* 1906, vol. xxix; [4]*Pract.* Aug. 1906; [5]*Ibid.* April, 1907.

LACHRYMAL APPARATUS (Diseases of). *A. Hugh Thompson, M.D.*

In no class of cases are the effects of a sound or unsound method of treatment more strongly contrasted than in lachrymal obstruction. The methods which are available are four: (1) Syringing; (2) Probing; (3) The insertion of styles; and (4) Excision of the lachrymal sac.

1. **Syringing.**—In simple cases of clear, and in mild cases of muco-purulent regurgitation, syringing is all that may be necessary, but it must be carried out systematically. The practice of Parsons[1] is to syringe simple cases every day for a week with some simple lotion (boracic or saline). The lower canaliculus is first dilated with Nettleship's dilator. The syringe is fitted with a fine probe-pointed straight cannula, which is introduced into the lachrymal sac, not into the nasal duct. Probably no fluid passes down into the nose for the first few days, but if this is still the case after a week, a mild astringent, such as zinc sulphate, 1 or 2 gr. to the ounce, should be used in the syringe, and after several syringefuls have been introduced, a little **Protargol,** 10 to 15 per cent, is passed into the sac, and the excess squeezed out. When once a free passage of fluid into the nose has been obtained, syringing is repeated at constantly increasing intervals: otherwise the condition is liable to recur. A point not mentioned by

Parsons is that the introduction through the syringe in the first place of a few drops of **Cocaine** ($2\frac{1}{2}$ per cent) and **Adrenalin** (5 per cent) solution is sometimes a material help.

2. **Probing.**—This, which was once the routine practice in these cases, is a method of treatment now falling into disrepute. The effect of passing a probe down an inflamed duct, says Parsons, is that the swollen and softened epithelium is torn, and the subepithelial tissues are lacerated. The result is that new fibrous tissue is formed, and subsequently contracts, so that although the probing may seem to have been effectual at the time (though, as a rule, at the cost of considerable pain to the patient), the ultimate state of affairs is worse than ever. Even when there is no active inflammation of the duct the passage of large probes is eminently calculated to do injury. In exceptional cases, however, and in skilled hands the occasional passage of small probes may be justifiable. In the case, for instance, of congenital stenosis of the nasal duct in infants, the passage once under an anæsthetic of a No. 2 or No. 3 Bowman's probe is often sufficient to effect a permanent cure. In the case of adults also the passage of a small probe may occasionally be required. It can generally be introduced without slitting up the canaliculus, but if there is any difficulty it is better, and involves far less discomfort to the patient, to slit it up for a short distance. The best knife to employ for this purpose is a probe-pointed one, which avoids the chance of wounding the floor of the canaliculus, leading possibly to subsequent scarring and contraction. Moreover, as a rule it is quite unnecessary to slit the canaliculus as far as the sac.

3. **The Insertion of Styles.**—This method is not so much used as before the value of efficient syringing was understood. It is a better method than frequent probing, and is useful especially in those cases where it is only possible for the patient to come for skilled treatment at long intervals. The style may be made either of lead or silver. A not infrequent accident in cliniques where styles are much employed is for the whole style to disappear down the duct, when it may be exceedingly difficult to recover it. At best this treatment is generally a palliative rather than a cure, and the upper end of the style, if it is safe from the accident already mentioned, is generally unsightly.

4. **Excision of the Lachrymal Sac.**—The radical treatment which has been in vogue on the Continent for many years has of late been increasingly adopted in England. In nearly all cases which have gone too far to be cured by syringing (with the exception of the infantile cases already referred to), it is probably the right thing to do. When the operation is efficiently performed it is effectual, and spares the patient a vast amount of discomfort. In old chronic cases, however, when the walls of the sac are friable, it may be almost impossible to remove it whole, and if any portion of the diseased sac is left the condition is liable to recur. This constitutes one of the two chief difficulties of the operation. The other is hæmorrhage, which is sometimes very troublesome. Adrenalin drops

are always a help, but pressure continued for one or two minutes at a time with a small swab of cotton-wool pressed against the bone is often necessary after the incision, and as long as a knife is used. For this reason it is better to work as far as one can with a blunt instrument, such as a raspatory, in separating the sac from the surrounding tissues. An efficient retractor is also a great help by keeping the small vesicles on the stretch. The accompanying diagram from Parsons' paper shows two. The small one (Müller's) keeps the lateral walls of the incision apart, and is sufficient by itself. The large one (Axenfeld's) is used by some operators in addition, as shown (*Fig.* 51).

A slight difference of opinion exists as to the best preliminary incision. All are agreed that this should not enter the sac, but keep to the outer side along the margin of the orbit. Parsons says the upper end should lie 5 mm. internal to the inner canthus; and that the internal palpebral ligament should be divided. Jameson Evans[2] advises that the incision should be begun just below this. If the former procedure is adopted, the subsequent stages are certainly easier, since the most difficult part of the sac to get out is the top end which lies behind the structure in question. For beginners the use of a probe is a great help in locating the position of the sac. The whole must be removed, and it is better to tear it away with a blunt instrument. It is also recommended that the upper part of the nasal duct should be scraped out with a sharp spoon. The wound should be completely sutured, and should heal by first intention.

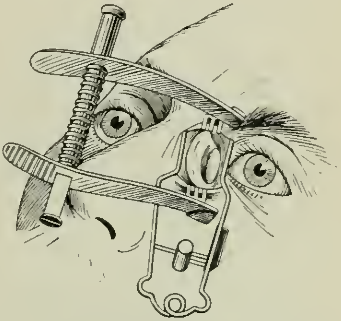


Fig. 51.—Müller's and Axenfeld's Retractors.

It is often asked, What becomes of the tears after the excision of the lachrymal sac? Probably the process of evaporation is sufficient to deal with them. At any rate, as a matter of experience, it is not found that epiphora gives any trouble after a successful operation.

REFERENCES.—[1]*Brit. Med. Jour.* Feb. 23, 1907; [2]*Ibid.*

LARYNGISMUS STRIDULUS.

(*Vol.* 1890, *p.* 340)—**Antipyrin**, gr. ij, hourly, is said to shorten the attacks. (*Index of Treatment*, *p.* 467)—Leonard Guthrie recommends the application of **Hot Sponges** to the front of the neck during the attack; the chin should be drawn forwards. Asphyxial symptoms are to be met by artificial respiration. Between the attacks attend to diet, and give **Rhubarb** and **Bromide of Potassium**.

LARYNX, DISEASES OF.

P. Watson Williams, M.D.

Benign Tumours.—A remarkably large laryngeal fibroma is recorded by Chappell,[1] who successfully removed the growth (*Fig.* 52) by subhyoid pharyngotomy preceded by tracheotomy. The patient, a female, aged 51, had had the growth for very many years, until by its increasing size it implicated both deglutition and respiration. The pedicle was attached to the left ary-epiglottic fold, and the bluish-grey neoplasm was covered with large tortuous vessels, and when being removed it was found that the growth was enclosed in a thick vascular capsule, from which, after incision, it was turned out. The tumour was smooth and irregular in shape, and was $4\frac{1}{2}$ in. in circumference.

Tuberculosis.—Jobson Horne's[2] important and valuable research into the channels of infection in tuberculosis included careful laryngoscopic observations on the larynx in 359 consecutive cases of pulmonary phthisis. He found that in nine cases only the larynx presented no change; in fifty-five, the larynx showed only changes that would escape naked-eye observation post mortem, viz., changes in colour and impaired movements of the vocal cords; in 261 there was infiltration or thickening, but no ulcer; in thirty-four there was, in addition to other changes, evidence of ulceration. He concludes that hypæsthesia or diminished irritability of the soft palate may be a premonitory sign of the lungs threatening to yield physical signs of tuberculosis. This hypæsthesia was found associated with anæmia of the soft palate. Unless the subject is intentionally hostile, the more pallid the soft palate the greater is the tolerance to laryngoscopy. Anæmia of the laryngeal mucosa as a whole or in parts was present in varying degrees in 157 out of the 359 cases. It is often associated with impaired sensation, and when at all marked Horne is inclined to look upon it as an early and important premonitory sign of pulmonary tuberculosis, more particularly when associated with loss of flesh. Hyperæmia was observed in approximately one-third of the cases. He has not noted any feature by which acute laryngitis in a tuberculous subject can be distinguished from that in a non-tuberculous one. An acute laryngitis which does not completely clear up, but remains localized, is suggestive of underlying tubercle.

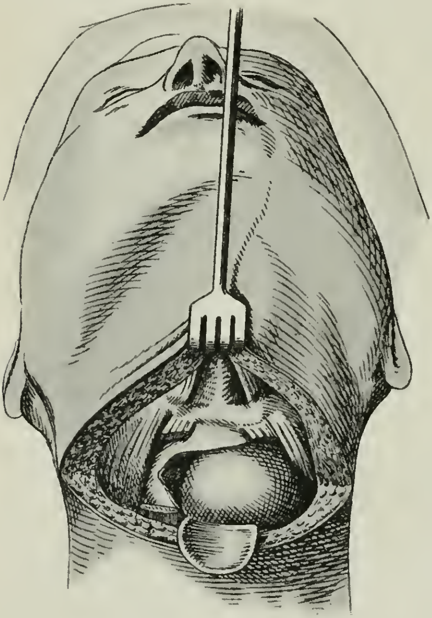


Fig. 52.—Chappell's operation on Laryngeal Fibroma.

Amongst the changes met with in the larynx of a person smitten with pulmonary tuberculosis, there is one which has not received the attention to which, owing to its constancy and distinctiveness, it is entitled, viz., the cords lose their semi-translucent mother-of-pearl sheen, and present a semi-solid opaque pallor more approaching a dead ivory-white. The explanation of this loss of lustre, Horne believes, is to be attributed to a failure on the part of the muciparous glands to discharge their secretion. A study of the earlier pathological changes of the mucosa showed these glands to be choked. The prominent glands, owing to the mucosa being stretched over them, at times have a yellowish-white appearance. They have been described as miliary tubercles, but under the microscope it is difficult to demonstrate histological tubercle. Horne is inclined to regard them as peculiar to the tuberculous subject. The failure of the glands to discharge their contents is to be attributed to a loss of tone in the intrinsic muscles, which he also regards as peculiar to tubercle.

Disturbances of the vocal function were so frequently met with that they may be placed in two classes: (1) Those occurring quite early in the course of pulmonary tuberculosis, the laryngoscope showing no signs of the cords themselves, or the adjacent tissues, being involved in any organic process; (2) Those in which the vocal changes could readily be accounted for by organic lesions, e.g., tumefaction, infiltration. In the former class the changes were usually transient, and did not amount to more than a weakness of voice or loss of tone. In such cases, the production of voice called for a greater effort; there was a forgetfulness of office, so to speak, on the part of the cords, sluggishness of one or both to act, phonatory waste where voice was produced. Horne has sufficiently often seen cases of so-called "functional" or "hysterical aphonia," in which thoracic signs of tuberculosis have subsequently been made out, to lead him to examine the thorax carefully in all such cases. In the second class, the more marked and persistent dysphonia was commensurable with the structural changes. It has been held that the interarytenoid excrescences are a mechanical cause of aphonia by jutting out and preventing the arytenoids from approximating and closing the glottis. Although that may be so, they are not of necessity a mechanical hindrance, inasmuch as at times these excrescences are above the level of the cords. However, as a rule, the lesions in the cords in such cases are alone ample to account for the hoarseness and loss of voice.

As regards the first class of dysphonic cases, showing no signs of organic changes, he asks, Is this transient condition of paresis to be regarded as neuropathic or myopathic? An argument against the neuropathic origin is that the paresis is too often unilateral, whereas the muscles controlled by the nerves are bilateral in their action. Moreover, it is important to note that whilst functional aphonia due to "hysteria" yields to electricity, in early tuberculosis electricity fails to restore voice. Horne considers from histological evidence that the dysphonia is myopathic and not neuropathic in origin.

With reference to the grosser lesions involving the vocal cords, Horne reminds us that the cord is divided into three parts by the insertion of a small cartilaginous sesamoid body in the anterior third, and by a similar and somewhat larger cartilaginous body, which forms the "vocal process," at the junction of the middle and posterior thirds. The part of the cord between these two sesamoid cartilages may be regarded as distinct from the anterior and posterior parts of the cords. It differs histologically inasmuch as it is covered with squamous and not columnar epithelium ; it is more ligamentous, and glandular structure is not met with in it so near to the surface ; physiologically, it is more essentially the vibratory and tone-producing portion of the cord ; pathologically, it is not infected by tubercle excepting by continuity from adjacent structures.

In the earlier stages of phthisis the different parts of the larynx presented infiltration and œdema in various regions thus : Epiglottis, free edge 30 cases, petiole 3 ; ventricular bands, bilaterally 57, right only 6, left only 3 ; arytenoid eminences, bilaterally 139, right only 10, left only 5 ; interarytenoid space 176 ; vocal cords (posterior third) 12. The author draws attention to the extreme frequency with which the interarytenoid space is implicated, a fine crenating or fringing occurring here due to the deposition of tubercle in the submucosa. More rarely there develops in this space an excrescence or tuberculoma. At times it is necessary to discriminate these from similar growths of a non-tuberculous nature. Both are brought about by pachydermatous changes in the epithelium ; that is to say, the epithelium undergoes a hyperplasia and a metaplasia. In the *simple* variety (pachydermia verrucosa simplex) the excrescence is an exaggeration of pre-existing parts, so that the natural central furrow in the interarytenoid region is maintained in the growth, and the growth is a symmetrical one occupying the centre of the interarytenoid space. In the *tuberculous* variety (pachydermia verrucosa tuberculosa) the growth does not occupy a central position ; it is usually developed more on one side of the space, and the central furrow is lost.

Finally, Horne states that the two most frequent sites of ulceration may easily escape clinical notice. The most common site by a long way was immediately behind the vocal process on the glottic aspect of the arytenoids ; the next in order of frequency was the glottic aspect of the interarytenoid space ; while the epiglottis and ventricular bands respectively were next. It is notable, however, that a site of infiltration does not necessarily so readily become the site of ulceration, some parts of the larynx being more resistant than others to ulceration.

REFERENCES.—[1]*Trans. Amer. Laryng. Assoc.* 1907 ; [2]*Jour. Laryng. Rhinol. and Otol.* July, 1907.

LEAD POISONING (Chronic).

General : Ascertain the source of the poison and separate the patient from it. Give **Potassium Iodide** (gr. v thrice daily) to promote the elimination of the lead. *Colic*, if severe, calls for **Rest** in bed, **Milk Diet**, **Fomentations** to the abdomen, **Saline Purgatives**, and **Opium**, as for instance : ℞ Magnesii Sulphat., gr. xxx ; Tinct. Opii, ♏viiss ; Aq. Chloroformi, ad ℥j ; every four hours, or thrice daily, according to the severity of the case. *Paralysis :* Forbid all alcohol, and apply **Massage** and **Galvanism**.

LENS. (*See* CATARACT.)

LEPROSY.

J. W. W. Stephens, M.D.

C. B. Ewing[1] summarizes the features of leprosy as seen in the Philippines :—

Initial Symptoms.—These are chills, fever, sweats, weakness, and drowsiness. There were noticed also dryness of the nostrils, headache, "pins and needles," hyperæsthesia, and pains in various parts of the body. The sweats generally affect the body or trunk, while the limbs frequently escape. Anidrosis also occurs, and later these areas become anæsthetic. The pains, of a lancinating character, may last one to two years. The peculiar dryness of the nostrils was a striking feature. Later the mucous membrane becomes ulcerated. Symptoms of peripheral neuritis are, as a rule, earlier and more pronounced in the anæsthetic than in the tubercular form of leprosy.

The Eruptive or Macular Stage.—The spots are not elevated, and vary in size from that of sixpence to many inches in diameter. The spots were erythematous, pigmented, or vitiliginous in the same individual. The ring form was also frequent, the central area being pale and anæsthetic, while the rings themselves might be hyperæsthetic. They occur chiefly on the face, nose, cheeks, ears, and especially the superciliary region, extensor surfaces of the limbs, dorsum of hands, buttocks, back, abdomen, and chest. The eyebrows are early lost, partially or completely. The eruption was most marked in the anæsthetic cases, and was symmetrical.

Stage of Specific Deposit.—If in the skin, nodular leprosy ; if in the nerves, the anæsthetic form results ; if in both, mixed leprosy.

Anæsthetic Leprosy.—The macular stage is of long duration. The appearance of bullæ, *pemphigus leprosus*, is distinctive of this form of leprosy. These break down and form ulcers, cicatrices, and leucospots, distributed on the hands, feet, knees, and back of the thighs. The nervous system is also deeply affected, as shown by the neuralgic pains, formication, hyperæsthesia, and anæsthesia. The glands become enlarged. The ulnar, median, and peroneal nerves become enlarged and cord-like, and the hyperæsthesia is followed by anæsthesia, paresis, muscular atrophy, etc. Muscular deformity is essentially characteristic of nerve leprosy, e.g., the *main-en-grippe*. The facies is almost as characteristic as that of leontiasis, the picture being the paralysed face, drooping and everted lids, cornified conjunctivæ, paralyzed lips, retracted gums, and dribbling mouth.

Nodular Leprosy.—The essential feature is the leproma, the lobe of the ear being an early and favourite site. The usual fate is for the leproma to soften in the centre and to be absorbed, giving a patch of smooth scar tissue. The tubercles may vary in size from that of a pea to a walnut, the forehead, nose, lips, chin, cheeks, ears, and forearms being the sites usually affected. The dusky, bloated, wrinkled, greasy face gives the picture of leontiasis. Another characteristic feature is the formation of plaques due to the confluence of individual lepromata. They are most common on the extensor surfaces of the limbs.

Rats and Leprosy.—R. T. Bull[2] describes a leprosy-like disease of a rat caught in Melbourne. The characteristic appearances were cutaneous nodules involving the subjacent muscular tissues, with a tendency to superficial ulceration, and patches of alopecia. Bacilli indistinguishable from *B. lepræ* (Hansen) were found in enormous numbers in the ulcers and in the glands. A few also were present in the liver, spleen, and lungs. "Leprosy" of the rat has also been recorded in Odessa. Berlin, and England. It will be of great importance to determine what relationship, if any, exists between rats and human leprosy.

TREATMENT.—J. A. Thompson[3] describes the treatment of a case of lepra tuberosa with **Chaulmoogra Oil** with approximate recovery, viz., to such an extent that a physician examining the patient for any other disease would not have had a suspicion that leprosy in any form was or had been present. The author, however, gives two methods, which he considers of great value in the diagnosis of leprosy: (1) Systematic examination of the peripheral nerve trunks as a matter of routine. In this patient, when approaching recovery, the right ulnar nerve was traceable for three or four inches above the elbow-joint; both peroneal nerves were enlarged and of unequal size, these being only invaded late in the disease. The author thinks that this enlargement of the peripheral nerves may, perhaps, be one of the earliest signs of the disease. (2) The subcutaneous injection of pilocarpine; under this, the occurrence of more or less dry areas of skin, intermingled with areas of normal sweating, is suspicious of leprosy, while dryness of the wrists and hands, and of the ankles and feet under its influence is decisive. The treatment of this case was as follows: At first gurjun oil was given, but this the author considers valueless. Then chaulmoogra oil was substituted. He began with 45 min. a day, divided into three doses; this was gradually increased in about a year up to 270 min. a day. At times, owing to general malaise, the dose was reduced for a time, and then raised again. The patient devoted himself to the treatment, which included also frequent **Hot Baths. Strychnine,** in the form of a pill, was also administered, starting with $\frac{1}{60}$ gr. three times a day, which was then rapidly increased till $\frac{1}{30}$ gr. three times a day was taken.

Unna[4] considers that with perseverance leprosy can be cured. The great difficulty lies in the failure of the skin to react, in the slowness of metabolism, and in the fact that the lymphatic spaces are filled with bacilli, and consequently drugs cannot easily penetrate to the affected parts. Moreover, the bacilli secrete a fatty substance, and are surrounded by a matrix of dead bacilli, so that aqueous solutions can only penetrate with great difficulty. **Warm Ink Baths** made by the action of tannin on sulphate of iron, act on this fatty body. A hot iron passed over the affected spot protected by flannel is also to be used. **Compression** by means of bandages and massage is used to cleanse the lymphatic spaces. This is combined with antibacillary treatment to avoid the danger of emboli. Saponification of the fatty substance of the bacilli is attempted by means of a paste containing **Caustic Potash.**

Cheloid is avoided by the injection of **Thiosinamine**. For specific treatment, Unna recommends an ointment composed of 5 per cent **Ichthyol**, 2 per cent **Salicylic Acid**, and 5 per cent **Pyrogallol**. The toxic effects are counteracted by the administration of dilute hydrochloric acid. Resorcin paste is less efficacious than the above ointment. Pure **Phenol** is excellent as a caustic for circumscribed lepromata. For recent or deep lepromata phenol 2 per cent is injected subcutaneously. **Chrysophanic Acid** acts on less advanced lesions. Sulphur is of great use in healing lesions due to energetic treatment.

Ichthyol internally and camphorated oil subcutaneously have a general tonic effect. **Chaulmoogra Oil** is the best internal specific. Internal and external treatment must be combined. The treatment must never be relaxed for even a day. Drugs must be changed to prevent toleration. The internal treatment must be kept up for years after external treatment has been stopped. Treatment of short duration, however energetic, will only give apparent cures.

Victor G. Heiser,[5] after discussing the history of leprosy in the Philippine Islands, and the prophylactic measures there taken, says that the only treatment that has given any hope of success is the application of the **X Rays**. Those cases which presented the greatest amount of leprotic deposit were selected. The most affected parts of the body were exposed to the rays for ten minutes at a distance of from seven to ten inches, the apparatus used being a 10-inch spark machine with a bifocal tube exhausted for a 10-inch spark. The burning point was approached as nearly as possible without actually inflicting injury. In two cases the skin was actually burned, and these were the two cases first reported as cured. In all, three cases were reported as cured. One died afterwards of atrophic cirrhosis of the liver, and the autopsy furnished no evidence that at the time of his death the patient was suffering from leprosy, either cutaneous or internal. The other two cases relapsed, one six months after treatment was stopped, the other nine months afterwards. One of these cases was treated again, and at the end of three months showed an entire absence of leprosy bacilli in the skin scrapings taken from regions in which they were previously found.

REFERENCES.—[1]*Med. Rec.* Dec. 22, 1906; [2]*Inter. Med. Jour.* May 20, 1907; [3]*Lancet*, Dec. 1906; [4]*Monats. f. prakt. Derm.* vol. xlii. No. 12, 1906; [5]*Med. Rec.* June 18, 1907.

LEPROSY.

(*Vol.* 1906, *p.* 305)—Dyer says leprosy is curable, and advises at least six months treatment, consisting of **Baths** twice daily, with or without **Soda**, **Strychnine**, and **Chaulmoogra Oil**. Begin the latter at three drops daily, and increase the dose every second or third day till 120 to 150 drops are taken; or give it in a pill with tragacanth and soap.

LEUCODERMA.

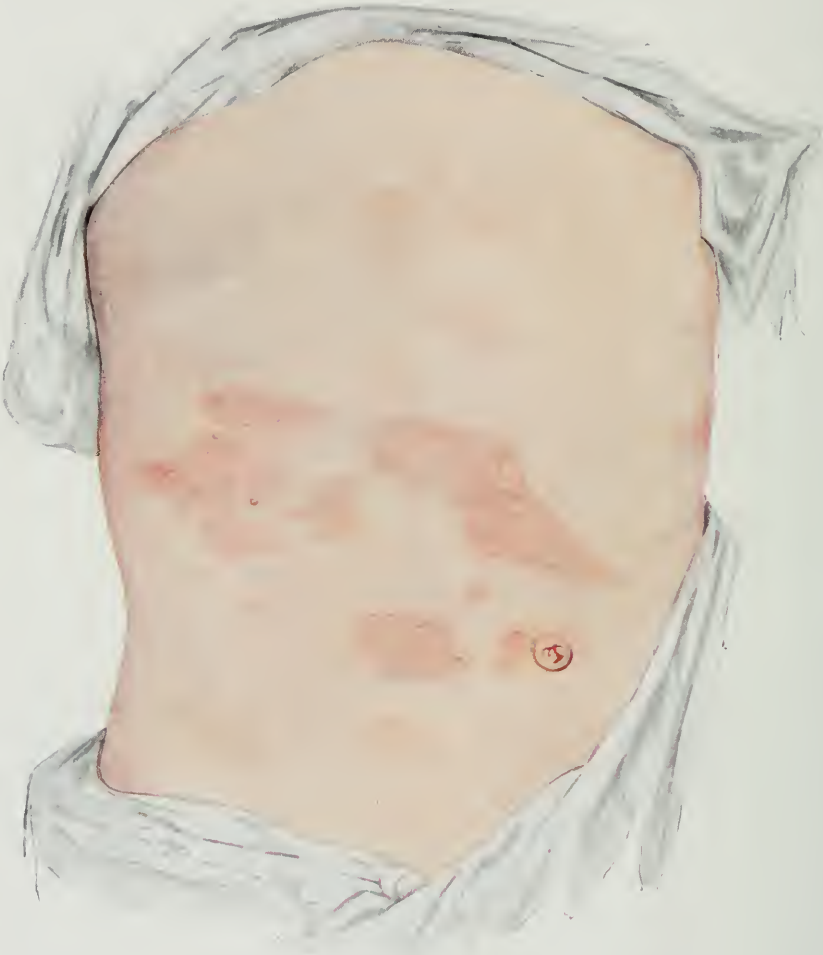
E. Graham Little, M.D., F.R.C.P.

Leucoderma may occur as a symptom of other well-known diseases, e.g., in leprosy, in syphilis, in receding psoriasis; or it may occur apparently spontaneously, with no discernible association. Willmott

Evans[1] considers only the latter group of cases, and in his interesting Erasmus Wilson Lecture discusses its etiology very fully. The disease is not a very common one, the statistics of several experienced dermatologists placing its frequency as between $\frac{1}{4}$ and $\frac{1}{5}$ per cent of all skin cases. Between twenty and forty years is the most frequent age at which it occurs ; the two sexes are fairly equally affected, but the dark races are certainly more susceptible to these changes, and probably warm climates are a factor in the greater frequency. The blanched portions of the skin are the diseased portions: not the apparently dark skin in immediate justaposition. Any hairs which may be present on these parts may lose their colour, and may even be shed, although this is exceptional. The sensibility of the skin is never affected in these parts. There is often a symmetrical distribution.

There would appear to be a very general consensus of opinion in favour of ascribing these pigmentary disorders to nervous influences ; but as this writer points out, the claim rests on three somewhat inadequate arguments, namely: (1) The symmetrical distribution ; (2) Concurrence of leucoderma with pathological conditions of the nervous system ; and (3) The existence of degenerative changes in the peripheral nerves in cases of the disease. Conclusive arguments are adduced to show that symmetrical distribution is no evidence of nervous origin, and that in fact the patches of leucoderma do not occupy the area either of nerve segments, or peripheral nerves or their branches. The supposed association of leucoderma with neurosis is in turn shown to rest on no very satisfactory basis. The third argument, that of definite degenerative changes in the peripheral nerves, rests on a single observation of Leloir's, and his finding has never been confirmed ; the complete absence of changes of sensibility would appear to contradict this supposition, and Leloir's case was probably not a true leucoderma. The fact of symmetry is nowadays rather regarded as an indication of transmission by the blood-stream, as in the well-known cases of drug eruptions and specific fevers ; the occurrence of chloasma in pregnancy, and of pigment changes in cirrhosis and constipation, is obviously an analogous fact to the occurrence of leucoderma, and the hypothesis of a chemical toxin circulating in the blood explains these cases far better than any supposed nervous influence. Wilmott Evans is inclined to ascribe the production of this toxin to morbid affections of the alimentary canal, and has observed this association in a large proportion of his cases. He thinks that the greater preponderance of pigmentary disorders in the tropics depends on the greater prevalence of intestinal ulceration in these parts. The localizing factors which control the distribution on the skin are injuries and light rays. The depigmentation is probably effected by " macrophage " cells, as Metchnikoff has shown to be the case in the blanching of the hair ; in old age the macrophage cells are stimulated to their action by the presence of a toxin, usually derived from the alimentary canal.

PLATE XXII.



LICHEN SCROFULOSORUM.

Treatment should be directed to clearing and disinfecting the alimentary canal.

REFERENCE.—[1]*Lancet*, Feb. 16, 1907.

LEUCOPLAKIA.

(*Vol.* 1899, *p.* 562)—Prescribe a diet free from irritants, and a weak alkaline mouth-wash. Use no caustics, except the **Galvanocautery** for deep and painful fissures. Treat the cause (syphilis) by **Mercurial Inunctions. Papayotin** is also recommended as a local application (English Papayotin, 1 part ; Distilled Water and Glycerin, 10 parts of each).

LEUCORRHŒA.

(*Vol.* 1898, *p.* 374)—The following is recommended as an injection, to be used thrice daily : ℞ Tannin, 6 parts ; Alcohol, 3 parts ; Creosote, 3 parts ; Water, 24 parts. Add one tablespoonful of this mixture to a quart of warm water to make the injection.

LEUKÆMIA.

J. G. Emanuel, B.Sc., M.D.

Emerson[1] reports three cases of exceptional interest :—

CASE 1.—Lymphatic leukæmia without enlargement of the lymph glands or spleen, with localized involvement of the bone marrow. The patient, a man of 35, lived but eight weeks after the definite onset of symptoms. The blood count showed : Hb 17 per cent ; red corpuscles 752,000 ; leucocytes 880,000, large mononuclears 97 per cent, small mononuclears 1·9 per cent, polymorphonuclears 0·51 per cent, myelocytes 0·34 per cent ; nucleated reds were very scarce. The changes in the bone marrow were confined to the vertebræ, in which the marrow showed pyoid hyperplasia.

CASE 2.—Acute (? myelogenous) leukæmia, with cells almost all achromatophilic. The patient, a man of 27, died on the twenty-fourth day of the disease. The red count remained about normal, while the leucocytes rose from 12,000 to 184,000 in the last two weeks of his illness. A differential count gave polymorphonuclears 41 per cent, large mononuclears 44 per cent, small mononuclears 10 per cent, on a day when the leucocyte count was 56,000.

An extraordinary feature of this case was the difficulty in staining the blood films, over a hundred futile attempts being made to stain the protoplasm of the leucocytes.

CASE 3.—Acute leukæmia with leucopenia. The patient, a female of 19, died after an illness of less than three weeks. The average of three blood counts was : Reds 900,000, leucocytes 2,600, Hb 15 per cent. Differential count showed large mononuclears 43 per cent, small mononuclears 39 per cent, polymorphonuclears 14 per cent. Clinically the case presented all the features of an acute leukæmia.

It is becoming more and more generally accepted that of the leukæmias the acute at least are myelogenous ; that is to say, that the so-called "large lymphocyte," which is the predominating cell in acute lymphatic (?) leukæmia is really a form of myelocyte, possibly an early generation of the cell which afterwards changes to the typical granular myelocyte, so characteristic of splenomedullary leukæmia. Certainly, it is not uncommon to see a film showing every transition between the two, so that the line drawn is only arbitrary.

REFERENCE.—[1]*Johns Hop. Hosp. Bull.* Mar. 1907.

LICHEN SCROFULOSORUM.

E. Graham Little, M.D., F.R.C.P.

The illustration (*Plate XXII*) is from a water-colour drawing of a very typical case of lichen scrofulosorum reported by me in the *British Journal of Dermatology*, 1901, p. 167.

Jacobi,[1] in 1891, demonstrated the tubercular structure of lesions of lichen scrofulosorum. These results have been confirmed by many observers, but Klingmuller reported a series of eighteen cases of the disease in which tubercular structure was found in only five. Lesseliers[2] has again taken up the study of this question, and in a series of seventeen cases in which the diagnosis of lichen scrofulosorum was made, he found in fourteen the "typical structure" of tubercle (epithelioid round cells, and giant-cells in groups). Of the remaining three cases, one showed epithelioid, but no giant-cells; one showed epithelioid cells with a single dubious giant-cell, and only one case showed a single inflammatory infiltration. To establish the diagnosis of lichen scrofulosorum it is essential to (1) Examine the lesion histologically; (2) Ascertain reaction of lesion to injections of tuberculin; (3) Search for bacillus in sections; (4) Perform inoculation in animals with the diseased tissue.

Certain eruptions indistinguishable from lichen scrofulosorum have followed upon the injection of tuberculin for other tuberculous diseases. The histology of these cases seems to point to their identity with the apparently spontaneous cases; in two instances typical tubercular structure was present. Jadassohn suggested in 1896 that in these cases of apparent reaction to tuberculin there is pre-existent tuberculosis, which becomes evident under the stress of the injection —a view which attempts to explain the speedy development of tuberculous disease which we must postulate if we suppose the injection to cause the eruption. But certain experiments of Bulloch's would confirm this early appearance of tubercular histological characteristics; this observer found giant-cells and even caseation taking place in the tissues within twenty-four hours of an experimental infection in an animal.

TREATMENT.—**Cod Liver Oil** should be given when this is tolerated. **Arseniate of Soda** is also useful. Locally, the parts affected should be washed with **Tar** or **Ichthyol Soaps**; and pastes with **Ichthyol** gr. 10, **Salicylic Acid** gr. 10, to the ounce, may be applied.

REFERENCES.—[1] *Verhandl. der Deutsch. Derm. Gesell. III. Cong.* 1891; [2] *Ann. de Derm. et de Syph.* Nov. 1906, p. 897.

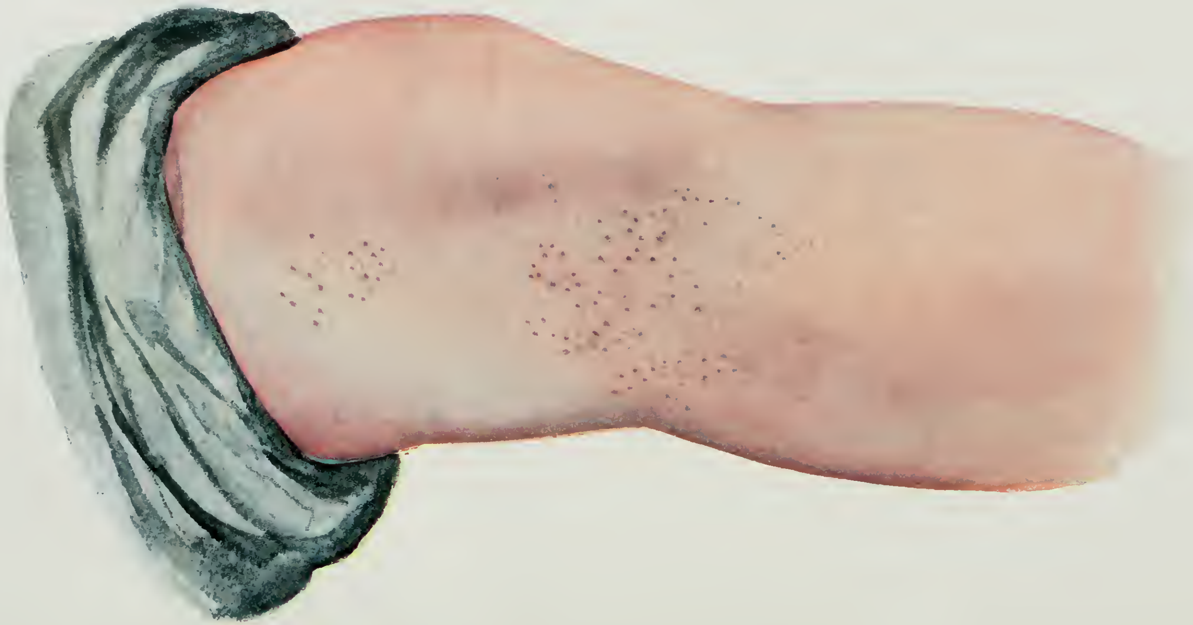
LICHEN SPINULOSUS.

E. Graham Little, M.D., F.R.C.P.

Bowen[1] describes an interesting case of this affection in a man aged nineteen, an unusually late age for the typical disease to develop. There were patches of closely-aggregated follicular papules, with thread-like spines projecting from them, about $\frac{1}{16}$ in. long. The arms and legs were chiefly affected, and the eruption was symmetrical. The disease would appear to be almost unknown in the United States; Bowen claims this to be the first case reported in that country.

Recently at the Dermatological Society of London several cases of lichen spinulosus have been shown, either in association with lichen planus, or that disease has developed later in the history of the case. Lichen spinulosus is far commoner in children than in adults, and

PLATE XXIII.



LICHEN SPINULOSUS.

MEDICAL ANNUAL, 1908.

lichen planus, as is well known, is uncommon under adult age. It has been suggested that lichen spinulosus is a juvenile form of lichen planus, and Pringle[2] believes these two diseases to be of common origin. The name "lichen" has been deprecated, as it is alleged that histological examination shows no inflammation round the follicles. Adamson[3] is of this opinion from the examination of one case. This writer quotes the observation of Levandowsky, which is directly opposed to this view. I must personally support the view of a definite perifollicular inflammation being present in these cases. *Plate XXIII* represents one of my own cases which I reported[4] with a description of the histological features of a section of the lesion. This showed "marked thickening of the stratum corneum, with horny plugs at the orifices of the hair follicles, which were greatly dilated; there was cellular infiltration, consisting of leucocytes, round the dilated follicles throughout their length." The name keratosis follicularis may be, and probably is, preferable to lichen spinulosus, the latter terminology suggesting an unproved association with lichen planus; but the older name may yet be justified.

The patches of disease may be most readily removed by the application of **Soft Soap** solutions, followed by inunction with **Ung. Acid. Sal.**

Brooke[1] recommends **Mollinum** with **Hydrarg. Iod.** to be rubbed into the patches, and removed by washing. For the most obstinate horny patches **Soft Soap** applied on lint, which is kept in position over the patch by strapping, or **Soap Plasters** may be used.

REFERENCES.—[1]*Jour. Cutan. Dis.* Sept. 1906, p. 416; [2]*Brit. Jour. Derm.* 1905, p. 79; [3]*Ibid.* p. 97; [4]*Ibid.* 1901, pp. 51, 98, and 419.

LIPOMATA.

E. Graham Little, M.D., F.R.C.P.

Dr. Agnes Savill[1] reports an interesting case of successful treatment of multiple lipomata in a man aged thirty-one. There were from seventeen to twenty lipomata, varying in size from that of a hen's egg to that of a pea. One was examined histologically, and was demonstrated to be a lipoma. The treatment consisted in painting the skin over each swelling with **Ethylate of Sodium** once to three times a week. A teetotal regimen was ordered, and active enuresis enforced, including breathing exercises and Swedish movements. Within eighteen months the smaller tumours had disappeared, and in the three subsequent years no fresh swellings had come, and all, even the larger, had steadily decreased in size. The patient had been a heavy beer-drinker, and suffered from constipation and defective circulation. These disorders improved concurrently with the treatment.

REFERENCE.—[1]*Lancet*, April 6, 1907.

LIVER ABSCESS.—(*See* DYSENTERY.)

LIVER, CIRRHOSIS OF.

Rutherford Morison, F.R.C.S.

It is now generally accepted that the ascites due to liver cirrhosis can, in suitable cases, be cured by an operation for the establishment of a new anastomotic circulation, which is chiefly brought about by the artificial formation of omental adhesions to the parietes. The cases most suitable are those of patients who, having survived repeated tappings, still retain fair health and are free from signs of serious disease elsewhere.

Sinclair White,[1] in opening a discussion on the surgical treatment of ascites secondary to vascular cirrhosis of the liver, carefully reviews the whole subject under various headings, and gives the history of five cases treated by operation, with a bibliography. Of the five recorded, four recovered and continued well after the operation, and one died.

Charles Greene Cumston[2] refers to drainage of the biliary tract in certain cases of cirrhosis. Infection spreading from the intestine is the primary etiological factor in certain cases of hepatic cirrhosis. Normally the biliary tract is aseptic, but the intestine abounds in organisms. Experimentally cirrhosis has been produced by the injection of organisms into the common bile-duct. The signs and symptoms in these cases are those produced by an injection. He says that in hypertrophic cirrhosis with icterus, surgical interference is indicated in the absolute failure of medical treatment. Under medical treatment these patients die. The results of **Cholecystostomy** have been good. The operation should be so performed that it allows of drainage for from two to three weeks, after which the fistulæ will close quickly when the drainage tube is removed, if the operation has been properly planned.

REFERENCES.—[1]*Brit. Med. Jour.* Nov. 10, 1906; [2]*Clin. Jour.* Sept. 19, 1906.

LIVER, DISEASES OF. (*See* HEART, DISEASES OF.)

LIVER (Temperature in Malignant Disease of). *Robt. Hutchison, M.D.*

Russell[1] has analyzed all the cases of malignant disease of the liver or bile passages admitted into the Birmingham General Hospital in the last twenty years, with a view to determining the value of the temperature chart in the diagnosis of some of the more obscure cases of hepatic and biliary disease, those, namely, in which the diagnosis lies between malignant disease, gall-stones, and suppuration, either alone or in various combinations, and in which the decision for or against operation depends upon the exclusion or otherwise of malignant disease. His conclusions are as follows:—

Nearly two-thirds of the cases of malignant disease of the liver show some degree of pyrexia, at any rate in their later stages. The pyrexia is capable of attaining a considerable height, but rarely shows genuine intermissions, in the sense of subsidence of the morning temperature below the normal level. It is not uncommon to observe successive periods of fever alternating with apyrexial intervals, and sometimes these alternations may occur with great regularity. Rigors do not occur in uncomplicated cases of growth of the liver. Pyrexia seems to occur in a still larger proportion of cases of growth of the gall-bladder and bile-ducts, being recorded in more than three-quarters of the cases investigated. The condition is frequently complicated by the presence of gall-stones, and it may be due to this fact that the pyrexia often reaches a greater height, with larger excursions, than is seen in the growth of the liver itself. Rigors apparently only occur when gall-stones are present. An isolated high rise of temperature may, however, be observed in growth of the bile-ducts in the absence of gall-stones, but as a rule such a rise is suggestive of the presence of gall-stones. In three cases of combined growth and suppuration there was nothing in the temperature to strongly suggest the presence of pus, though one case gave a single high rise of temperature. In hepatic abscess the charts may present little that is characteristic of suppuration, at any rate if observed only for a short time; but where high rises of temperature from a low level are noted, these are likely to be repeated at frequent intervals, and thus to contrast with the isolated rises seen in cases of stones or growth. It is possible, however, that the examination of a larger number of cases might not support this statement.

REFERENCE.—[1]*Brit. Med. Jour.* Feb. 9, 1906.

LUMBAGO.

(*Vol.* 1899, *p.* 380)—Advise active **Exercise**, care in diet, and warm clothing, between the attacks. The exercise should be continued even when pain is present, as long as the patient can tolerate it. Locally apply **Blisters, Sinapisms**, or **Heat** (rubbing with a very hot towel, or ironing the back protected by brown paper). Internally give **Alkalies, Aconite**, and **Colchicum**. (*Vol.* 1899, *p.* 381)—**Dry Cupping** is recommended. (*Vol.* 1902, *pp.* 4 and 393)—Others speak highly of **Acupuncture**.

LUPUS ERYTHEMATOSUS.

(Radcliffe Crocker, *Diseases of the Skin, p.* 769, 1903 *Ed.*)—*Internally:* **Ichthyol**, ♏ v, in pills or capsules, three times a day, reduces hyperæmia. **Arsenic, Quinine** in full doses, **Phosphorus**, gr. $\frac{1}{50}$ to $\frac{1}{30}$, thrice daily, are also recommended. Search for and treat errors of general health. *Locally:* In hyperæmic cases apply **Soothing Lotions** (e.g., R Calaminæ Levigatæ, gr. xl; Zinci Oxidi, gr. xl; Glycerini, ʒj; Aq. Calcis, ad ℥j). In less active cases **Collodion** does good by compressing the vessels. To remove crusts, rub with **Benzoline**, and then apply **Boric Ointment**; this, done at night, should alternate with soothing lotions by day. For chronic and obstinate cases, **Linear Scarification**, followed by **Iodoform Friction**, is preferred to caustics. **X Rays, Finsen Light**, and **High-Frequency** treatment, are also recommended.

LUPUS VULGARIS.

E. Graham Little, M.D., F.R.C.P.

Kenneth Wills[1] reports a series of eighty carefully-observed cases of lupus, which he classifies under the following types: (1) Extensive erythematous forms, spreading widely and rapidly, and possibly affecting nerve-areas; (2) Nodular forms, with no suggestion of nerve distribution, no tendency to ulceration, and of slow growth; (3) Hypertrophic forms, with exuberant granulations; (4) Ulcerative forms, where ulceration is an essential feature; (5) Verrucose forms, chronic and indolent; (6) Œdematous forms, with much lymph stasis; (7) Sclerodermic forms. Any special type which the disease may take is usually persistent, and fresh invasions follow the same type. Phthisis, he found, of a fibroid chronic variety, in 3·75 per cent of the cases; tuberculous dactylitis in 3·25 per cent; hip disease in 1·25.

The treatment is dependent to some extent on the type of the disease. The erythematous form does not react well with X rays or Finsen light. Long-continued X-ray treatment apparently contributed, in one case at least, to the development of carcinoma. The nodular forms do well with **Finsen Light.** The disappearance of the nodules may be hastened by probing them with a pointed stick dipped in pure **Carbolic Acid.** The hypertrophic forms succeed best of all with the **X Rays** and with **Finsen** treatment ; the ulcerative forms also do well with these agencies. X rays are on the whole more efficacious than the Finsen light in most varieties of lupus except the nodular type, in which Finsen light is particularly valuable.

Dreuw[2] has devised a method of treating lupus which he claims to be equally efficacious with radiotherapeutic methods, and far more easily and expeditiously administered. He freezes the lupus patch with ethyl chloride, or with carbonic acid gas, till it is snow-white. Crude **Carbolic Acid** is then rubbed thoroughly over the frozen surface, the acid being applied with a stick, round which a wad of cotton-wool is wrapped. For large patches, a general anæsthetic should be given, and the patches treated freely in this way while the patient is unconscious. Lupus of the nasal passages may be treated in the same way with **Hydrochloric Acid**, under general anæsthesia, the part being previously scraped with a spoon, and bleeding stopped with adrenalin. The posterior nares should be plugged. After cauterization in this way, the treated areas must be dusted with **Eugoform**; and later a zinc gelatin or zinc sulphur paste may be applied. Scabs form and fall off in about two to four weeks. Any isolated nodule which remains may be treated by freezing, and puncture with a sharp wooden stick dipped in crude hydrochloric acid.

Dewar[3] reports an instance of an extraordinarily successful result of giving **Iodoform Injections** in a case of chronic lupus vulgaris. The patient had had lupus for fourteen years ; she had been treated with various local applications, and finally with the Finsen light for a twelvemonth, with but meagre and transient success. When seen by Dewar the patient had very numerous ulcerated patches on the face and ears. The treatment adopted was as follows : The scabs were washed off with hot water, or gently removed with a spoon or forceps ; thin pieces of cotton-wool soaked in 5 per cent solution of cocaine were applied to the ulcers for a few minutes ; then pieces of cotton-wool soaked in 10-volume solution of hydrogen peroxide were left on the affected parts, being kept in position by touching the edges with collodion. Every second day an intravenous injection of 15 minims of an ethereal solution of iodoform with liquid paraffin was given. Forty days later the patient " was quite healed in every part." No bacilli had been detected in the discharges, but the patient had reacted " violently " to a test injection of Koch's old tuberculin.

Willmott Evans[1] sums up the present methods of treating lupus vulgaris under the following headings : (1) Application of caustics and scarification ; (2) Scraping, with or without after-application of caustics ; (3) Excision ; (4) Actinic treatment ; (5) Opsonic treatment ; in the order of their introduction into practice. Lupus on the face and neck, owing to cosmetic considerations, requires the least disfiguring results, and thus practically restricts choice to the actinic methods—X rays and Finsen light,—but lupus on the body is still best treated wherever possible by excision or scraping. The opsonic method—injection of tuberculin, with careful regard to the opsonic index—is specially valuable when tendency to recurrence is great, where there is predisposition to tubercle, and where the area is large.

REFERENCES.—[1]*Bris. Med.-Chir. Jour.* June, 1907 ; [2]*Lancet*, July 13, 1907 [3]*Brit. Med. Jour.* Mar. 10, 1907 ; [4]*Brit. Jour. Derm.* Feb. 1907, p. 36.

LYMPHADENOMA.

In early and localized cases the glands may be excised. **X Rays** have proved temporarily beneficial. Internally administer **Arsenic** as, for instance, in ℞ Liq. Arsen. Hydrochlorid., ♏v ; Quinin. Hydrochlorid., gr. ij ; Liq. Ferri Perchlorid., ♏xv ; Syrupi, ʒj ; Aq., ad ℥j ; thrice daily after food. Increase the arsenic slowly till ♏xlv are taken in the day. **Phosphorus**, or **Cod-liver Oil**, may be used when arsenic is not well borne. Tuberculosis must be excluded ; the tuberculin reaction may be used for this purpose.

LYMPHANGITIS.

(*Vol.* 1899, *p.* 68)—**Thiol** is recommended, to be used as a paint. (*Vol.* 1900, *p.* 8) —Compresses of 90 per cent **Alcohol** have also given very good results.

MALARIA.

J. W. W. Stephens, M.D

C. F. Kieffer,[1] from a study of malignant disease and malaria in Cuba, comes to the conclusion that there is no real antagonism between the two, and also that malarial infection supervening on malignant disease does not modify the latter.

J. H. Burgess,[2] from the study of cases seen by him in Malakand, N.W. frontier, India, concludes that there is such a thing as true malarial pneumonia. One case had a malignant tertian chart ; parasites present ; no leucocytosis, but yet typical signs of pneumonia. A second case had an enlarged spleen, an increase in the large mononuclears, but no parasites, nor had he a leucocytosis, but there was no alleviation of the symptoms during the apyrexial intervals, as was the case in the first instance.

S. F. Clark[3] advocates **Intramuscular Injections of Quinine.** His cases occurred in Hong-kong, where there was a great tendency towards hyperpyrexia and coma. On admission of a severe case, 10 gr. were injected at once ; 5 gr. of quinine are then given orally thrice daily. If the temperature is over 101° F. a diaphoretic mixture is given every two hours ; if vomiting is present, hot water, to be taken freely instead of the diaphoretic mixture. If the temperature is over 104° F., 10 gr. of phenacetin in 1 oz. of brandy are given. If it again reaches this level, creosote (40 min.) is rubbed into the abdomen. If the temperature again rises, continue the diaphoretic until the temperature is 105°, and then give an ice-water bath, repeating, if necessary. Keep an ice-bag on the head, and rub the head and neck with a piece of ice freely and frequently. After twenty-four hours, if no improvement appears, another injection (10 gr.) is given, and sometimes a third after forty-eight hours. Frequently, however, nothing but ice-water baths is really efficacious ; or if the patient cannot endure them, sponging with ice-water, or the giving of a large enema of ice-water. The hypodermic is best given by using an all-glass syringe with platinum needle. The best salt is the bihydrochloride. The syringe and needle are boiled. The quinine can be dissolved in a test-tube, or spoon, by heating (15 min. of water will easily take up 10 gr. of the quinine). The skin is washed with soap and water, and a pad of lint soaked in carbolic lotion placed on the part. The injections should be made into different parts, e.g., left deltoid, right deltoid, and gluteal region. The needle should be passed deeply, right into the muscle.

The same writer draws attention to a somewhat unusual complication of malaria, viz., hæmorrhage (? hæmoglobin) from the bowel. He has observed it in England, in cases of malaria returning from Ashanti, and also in India and China. It generally occurs in those subject to frequent attacks of either ague or remittent fever. The patient passes a large quantity of claret-coloured liquid. Half-a-dozen similar stools may be passed before the condition is checked. The treatment consists in the use of ice externally, and astringents internally. Vomiting is a source of great trouble, for each act of vomiting is apt to be followed by a fresh flow of blood from the bowel. If the vomiting allows of drugs being given by the mouth, **Laudanum** and **Ergot** should be administered ; if not, hypodermic or intramuscular injections of ergot. **Quinine** should also be given in the same way.

Blackwater Fever.—W. T. Prout[4] recommends the following mode of treatment :—

1. Five to 10 gr. of **Calomel** are given as a matter of routine, whether constipation is present or not. It should be given with a little water. If the bowels do not act freely within a short time it is well to give an effervescent saline, and if this is vomited, to have recourse to a large enema of soap and water with a little castor oil added.

2. If severe vomiting is present, no drugs must be given by the mouth. Instead, an **Enema** of **Normal Saline Solution** is given in the morning, to the extent of several quarts if possible, by means of a long soft rectal tube. The enema may be repeated during the day. This is beneficial both in cleaning out the gut and in promoting diuresis. In cases where there is intense gastric irritability, failing pulse, great restlessness, and diminishing urine, an **Intravenous Injection of Saline** should be given. Two soloids (Burroughs, Wellcome & Co.) of sodium chloride are dissolved in a pint of boiled water, and the fluid injected at a temperature of 100° F. The skin is carefully cleansed, and a vein at the elbow is dissected out (chloroform is unnecessary, as in bad cases the senses are blunted, and there is little pain). A ligature is passed under the vein and tied, the vein is opened above this, and a cannula inserted. Another ligature is tied round the vein and cannula, and the saline solution allowed to enter. When a pint or more has entered, the cannula is withdrawn, and the ligature drawn tight ; the operation is then complete.

3. If malarial parasites are found, one dose of **Quinine** is given, and the result watched. The quinine is given hypodermically, 5 to 8 gr. of the neutral hydrochlorate, or 15 gr. are given as an enema in bovril, as milk does not mix well.

4. In mild cases food is given in small quantities and frequently, e.g., Brand's essence of beef, sterilized milk and soda, thin arrowroot, bovril, etc. If vomiting is severe, nutrient enemata, 2, 4, or 8 oz., are given every two hours throughout the day, after the large morning enema. Peptonized milk and eggs, bovril, or Brand's essence may be used, and ½ oz. of brandy may be added with advantage. Six to 8 oz. of alcohol (brandy) in the twenty-four hours is sufficient, as there is a danger of over-stimulating the heart.

Symptomatic Treatment.—A large **Sinapism** over the epigastrium may somewhat relieve vomiting, but rarely arrests it. Vomiting is sometimes markedly relieved by allowing the patient to drink as much water as he likes. Thirst may be alleviated by allowing the patient to wash out his mouth with water acidulated with fresh lime juice, or, if fluid can be retained, barley-water may be taken. The body is sponged with tepid water containing some eau-de-Cologne or Florida water. Fresh lime-juice is often soothing. Frequent bathing of the hands and arms is also refreshing. For sleeplessness morphine is given hypodermically.

REFERENCES.—[1]*Med. Rec.* April 25, 1907; [2]*Ind. Med. Gaz.* April, 1907; [3]*S. Afric. Med. Rec.* July 25, 1907; [4]*Brit. Med. Jour.* Nov. 9, 1907.

MALTA FEVER.

J. W. W. Stephens, M.D.

C. N. C. Wimberley[1] draws attention to the existence of Malta fever in the following places in Northern India: Mian Mir, Rawal Pindi, Murree, Nowshera, and Peshawur, and points out that goats' milk is commonly consumed by natives. P. D. Strachan[2] records its existence in many parts of the Transvaal, Orange River Colony, and Cape Colony, and adds that although the micrococcus has not yet been grown from the milk or blood of South African goats, yet the serum reactions render it probable that the goat is a factor in the spread of the disease.

L. Bousfield[3] reports a case of Malta fever with ulceration of the small intestine, and has observed several others in which there was more or less profuse hæmorrhage from the intestine. In the present case there were eight ulcers situated from 18 to 36 in. from the ileocæcal valve. The largest was 10 by 6 mm., and the smallest was 4 by 3 mm. The ulcers were mainly opposite the mesenteric attachment; some appeared to correspond to the distribution of Peyer's patches, while others did not. The margins were raised and infiltrated, the edges were sinuous and shelving, though in parts undermined. The bases were not thickened. The condition suggested typhoid fever complicating Malta fever, but the bacteriological investigation of the spleen gave pure cultures of *M. melitensis*.

E. Axisa[4] also describes the occurrence of intestinal hæmorrhage in Malta fever. The abdomen was tender, especially in the right iliac fossa. The diazo reaction was well marked. There were no rose spots. There were 7200 leucocytes and 4,120,000 red cells. The Widal reaction was negative in a dilution of 1–100, but agglutination with *M. melitensis* was positive in a dilution of 1–250. Two attacks of profuse intestinal hæmorrhage occurred, the first stool consisting of an almost black mass, and the second of dark red clots in liquid fæces. Two subsequent profuse hæmorrhages occurred. The author recalls the fact that Hughes found ulceration in three out of sixty-two cases examined in the treatment of Malta fever. A strictly liquid diet is essential, and should be continued well into convalescence.

REFERENCES.—[1]*Ind. Med. Gaz.* April, 1907; [2]*S. Afric. Med. Rec.* Dec. 10, 1906; [3]*Jour. R.A.M.C.* Aug. 1906, in *Lancet*, Oct. 20, 1906; [4]*Zentr. f. inn. Med.* April 14, 1906, in *Brit. Med. Jour.* Sept. 8, 1906.

MARASMUS INFANTILE.

(*Vol.* 1904, *p.* 521)—Combe and Narbel, regarding the disease as primarily gastro-intestinal, advise **Irrigation** of stomach and bowels, with administration of **Calomel** as an alimentary antiseptic. If there is diarrhœa, give **Tannigen**, gr. iiss, or **Dermatol**, gr. iij; if the child is constipated use **Salacetol**, gr. ss to gr. iss. **Lecithin**, gr. xv, injected every other day into the muscles of the thigh, improves both appetite and digestion.

MASTOID DISEASE. (*See* EAR.)

MEASLES.

E. W. Goodall, M.D.

A fatal case of acute myelitis following measles in a woman of 25 is recorded by Primangeli.[1] In an epidemic of 551 cases which occurred in the Campagna of Rome, in June, 1905, Lesen[2] observed the following instances of serious nerve lesions: spastic paraplegia in a boy of 11, paraplegia in a boy of 2, fatal acute ascending paralysis in a boy of 8. All these lesions occurred during measles.

DIAGNOSIS.—One or more of four important events may characterize the prodromal stage of measles: (1) Prodromal rashes; (2) The remission; (3) Acute laryngitis; (4) Koplik's spots.

1. The most common prodromal rash is a punctate erythema, usually on the trunk, though it may spread to the limbs. MacCombie[3] and Lesen[4] remark on the resemblance of this rash to scarlet fever. The latter observed it in many cases in an epidemic in Rome in June, 1905. The next most common is a papular and macular rash, not unlike the proper one of the disease. Another, less common, is urticaria. Lastly you may sometimes see an ill-defined mottling, on the trunk chiefly. All these rashes come out usually on the first day of illness, though occasionally they may be delayed to the second or third.

2. The remission is fairly frequent. The initial symptoms (except Koplik's spots) disappear, and the patient may seem to be quite well. But after a few hours, or a day or two, the symptoms recur and the rash comes out. Usually there is only one remission, but there may be two or three.

3. Signs of laryngeal inflammation frequently usher in an attack of measles, and a diagnosis of diphtheria may be erroneously made.

4. Koplik's spots have been described in former volumes of the *Annual*. It is useful to remember that though in most cases they appear on the first day of the illness, they may not do so till the third or fourth day, or even later. In such cases the rash is late. The writer has observed them, in three cases, twelve to forty-eight hours before the temperature rose, the only other signs of measles being slight coughing, sneezing, and lachrymation. Air-bubbles, minute fragments of food or inspissated mucus, the mucous glands of the mouth, and very small ulcers may be mistaken for these spots. In one case the spots were observed to come out in considerable numbers within four hours.

The proper eruption of measles comes out on the third or fourth day most commonly ; but it may be delayed till the sixth, or even later.

Sometimes measles is abortive or modified. Then there are very slight symptoms (coughing, sneezing, pyrexia), and an ill-defined or sparse rash, but Koplik's spots are present.

Seldom is the disease rapidly fatal ; but the writer[5] has met with cases fatal in two or three days ; in such there is profound prostration from the commencement.

REFERENCES.—[1]*Il Policl.* Anno xiii. Fasc. 36 ; [2]*Ibid.* Anno xiii. Fasc. 51 ; [3]*Brit. Med. Jour.* Dec. 22, 1906 ; [4]*Il Policl.* Anno xiii. Fasc. 36 ; [5]*Brit. Med. Jour.* Aug. 17, 1907.

MÉNIÈRE'S DISEASE.

(*Index of Treatment, p.* 252)—A **Milk Diet** is valuable. Give **Hydrobromic Acid,** ♏xl to cxx, three times a day, and prolonged counter-irritation by **Blisters** behind the ears.

MENINGISM.

E. W. Goodall, M.D.

This is a term which was applied by E. Dupré in 1894 to a set of symptoms not uncommonly met with in acute febrile conditions. The symptoms point to a slight degree of meningitis ; but either the patient recovers or, if he dies, no definite sign of meningitis is found at an autopsy. Tylecote[1] tentatively defines meningism as "a functional condition caused by the selective action on the meninges and cerebral cortex of the toxins which are circulating in the blood-stream" of some of the acute infectious diseases: erysipelas, mumps, scarlet fever, diphtheria, measles, influenza, typhoid fever, etc. Tylecote discusses the condition from various points of view. The most constant sign is retraction of the head ; the muscles of the neck are rigid, a condition which seems to distinguish meningism from the retraction not infrequently met with in children who are suffering from faucial inflammation ; here the retraction is more or less voluntary, as the patient throws the head back in the endeavour to obtain more free respiration. The retraction of meningism is variable in degree and duration. Sometimes opisthotonus is also present. The patient lies on his side, with arms flexed and legs drawn up. There is extreme restlessness and irritability, sometimes with screaming or crying.

Rigidity, headache, twitchings, and slight convulsions may occur. According to Tylecote, Kernig's sign is never present. The temperature is not necessarily raised. The fluid removed by lumbar puncture is clear and watery, and contains no cells, except in some cases lymphocytes.

REFERENCE.—[1]*Med. Chron.* June, 1907.

MESENTERY.—(*See* INTESTINES.)

MOTOR APPARATUS OF THE EYE. (*See* EYE-MUSCLES.)

MIGRAINE.

(*Vol.* 1902, *p.* 427)—*Between the attacks*, treat underlying general conditions (gout, overwork and worry, eye-strain, dyspepsia, constipation, etc.). Once a week the patient should take **Pil. Hydrargyri**, gr. v, overnight, followed by a saline in the morning. All other mornings in the week give **Sodium Sulphate**, ʒj to ʒij, with **Sodium Salicylate**, gr. x, in a tumbler of hot water. Half-an hour before meals give **Potassium Bichromate**, gr. $\frac{1}{20}$, with **Bismuth Carbonate**, gr. iij, in a pill. Half an hour after meals, and at night, give 10 gr. each of **Phenol**, **Bismuth**, and **Sodium Benzoate**, in separate capsules. *For the attacks*, give **Ext. Ergotæ Liq.** et **Inf. Cinchonæ**, āā ʒj, in water; or give **Lactophenine**, gr. x, with Caffeine Citrate, gr. ij, every two hours; or **Antipyrin**, gr. xv, with **Spt. Ammon. Arom.**, ℥j.

MILK (Deficiency of).

(*Vol.* 1888, *p.* 425)—In cases where this is not dependent on anæmia, phthisis, or other constitutional cause, it may be treated by **Faradization** of the mammæ for ten to twenty minutes daily. The current should not be strong enough to cause pain. Secretion should appear on the fourth day. **Pilocarpine Nitrate**, gr. $\frac{1}{2}$, in daily subcutaneous injections, has proved successful. (*Vol.* 1888, *p.* 32)—**Carica Papaya** is also recommended for the same condition.

MUMPS.

(Goodhart and Still, *Diseases of Children*, *p.* 261, 1902 *Ed.*)—Keep the child warm in one room, and give a soft solid diet. For the pyrexia give **Barley Water** freely; if severe, give **Aconite** in small doses. For pain, apply warm moist lint, sprinkled with **Lin. Belladonnæ**, and covered by oil silk. If this is not sufficient, give **Pulv. Ipecac. Co.** in small doses. **Pilocarpine Nitrate**, gr. $\frac{1}{8}$, twice daily, might be useful. Keep the child indoors nine to ten days, and follow this by a tonic (e.g., Parrish's Food). For older boys enjoin nine to ten days' rest in bed; if the temperature rises then, suspect orchitis, and treat this with ice locally.

MYALGIA.

(R. Stockman, *Index of Treatment*, p. 694)—During the *acute stage* of "muscular rheumatism" treat by rest, light diet, **Saline Purgation**, and **Salicylate of Soda**, sometimes with **Phenacetin**. Local measures of value are **Massage**, **Heat**, **Mustard Poulticing**, **Methyl Salicylate Paint**, and a liniment consisting of Linimentum Aconiti, 1 part; Linimentum Belladonnæ, 2 parts; Linimentum Chloroformi Co., 3 parts. For *chronic and recurrent cases*, **Massage**, **Faradism**, and systematic **Exercises** are useful. **Spa** treatment may cure or relieve, and the pains are less troublesome in a dry, warm climate. **Phenacetin** and its allies, and the **Salicyl** compounds, give temporary relief to pain. Rhubarb and grey powder at night, followed by a saline in the morning, will check intestinal fermentation. The diet should be simple.

MYCOSIS FUNGOIDES.

(*Vol.* 1903, *p.* 471; *Vol.* 1904, *p.* 55; *Vol.* 1906, *p.* 329; *Vol.* 1907, *p.* 377)—The most satisfactory treatment is by means of the **X Rays**, though Gaucher recommends the **Actual Cautery**, combined with **Sodium Arseniate** internally. The rays have in a number of cases brought about a complete disappearance of the disease.

MYELITIS.

The acute transverse form, in young and middle-aged adults, is often syphilitic. Treat, therefore, with **Mercury** and **Iodide**. Ung. Hydrargyri to the size of a hazelnut should be rubbed in (the axillæ and groins being used in turns) every night; and the following mixture given, ℞ Liq. Hydrarg. Perchlor., ʒj ; Potass. Iod., gr. v ; Glycerini, ʒj ; Aq. Chloroformi, ad ℥j ; thrice daily after food. Increase the iodide by 2½ gr. every third day, till 60 gr. are being taken per diem. Empty the bladder 2 or 3 times in the 24 hours, and the rectum every third day ; keep the skin clean. (*See* Bedsores.)

MYXŒDEMA.

(*Vol.* 1900, *p.* 49)—**Sheep's Thyroid** may be given minced, with glycerin, or very lightly fried, a quarter of a lobe per diem ; or give Liq. Thyroidei, ♏x ; Aq. ad ℥ ss, every morning. In cases where the heart is feeble, give ♏iij–v at first, increasing the dose continuously. If the dose is raised above ♏x watch for tachycardia. In cases with anæmia give **Ferri Sulphat. Exsicc.**, gr. v, thrice daily, in a pill. The thyroid treatment must be continued throughout life, with intermissions of not more than 1 or 2 weeks. (*Vol.* 1900, *p.* 369)—**Thyroid Palatinoids, Desiccated Thyroids**, and **Iodothyrin**, have all been used successfully.

NÆVUS.

(*Vol.* 1899, *p.* 512)—Quite large nævi may be obliterated by **Electrolysis.** Cleanse the skin as for any aseptic operation ; make parallel lines of puncture across the nævus with a needle connected with the negative pole. At each puncture complete the circuit by making the patient clasp the positive pole, *not* by the insertion of the needle. The operation will need to be repeated many times. (*Vol.* 1904, *p.* 62)—**Radium** is said to be of considerable value in the destruction of nævi.

NASAL ACCESSORY SINUSES, DISEASES OF.

P. Watson Williams, M.D.

Though for the last eighteen years the frequent epidemics of influenza have no doubt largely accounted for the enormous numbers of patients coming under treatment for disease of the nasal accessory sinuses, and for the general recognition of the more striking cases, much has yet to be learnt about the complications which such disease may originate. Stucky[1] has related a series of cases coming under his own observation, where definite mental symptoms—and suicidal tendencies in many of them—were completely removed by operations for the relief of suppuration in the accessory sinuses. One case—of fronto-ethmoidal and sphenoidal sinus suppuration on the right side—was bordering on religious mania, but it is also of interest that he had drooping of right eyelid, the right pupil was dilated, vision was $\frac{20}{40}$ on that side, and the edge of that disc showed slight swelling. He cites one other case of fronto-ethmoidal and sphenoidal sinus disease, and ten where the sphenoidal sinus was not involved, all cured and relieved of mental aberration. We particularly refer to the ocular symptoms in Stucky's case, for their importance requires emphasis. They have been described by Fish,[2] of Chicago, who, indeed, refers to several instances of enucleation of the eyeball, quite unnecessarily, but simply because either unrecognized nasal disease had caused the eye symptoms, or the interdependence of eye and nose disease was not realized. He concludes with the remark that, "Were the ophthalmologist to regard a retro-ocular œdema, the involvement of an external muscle, a sluggish pupil, and an idiopathic inflammatory condition about the orbit or within the globe, as a symptom of disease of the accessory sinuses, these unfortunate enucleations might be avoided, and in many instances the function of the eye be preserved."

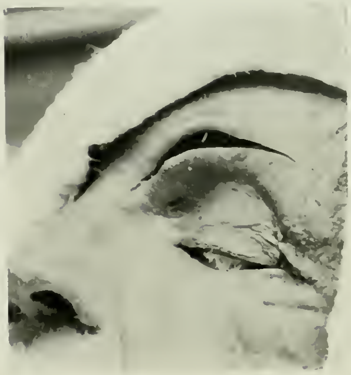
Posey's[3] observations on the ophthalmological phase of diseases of the nasal accessory sinuses constitute a further valuable contribution from the eye specialists. This author considers that in moderate inflammation of the optic nerve complicating choroiditis and sphenoiditis, e.g., from bathing, the nerve becomes affected by contiguity of tissue, the inflammation varying in intensity from a simple œdema to an active retrobulbar inflammation. Moderate degrees of neuritis present but slight ophthalmoscopic signs, but may frequently be diagnosed by the distention of the lymph-sheaths of the retinal vessels, and objectively by a diminution of the light sense, while in this class of cases there is often a feeling of fullness in the eye, with some sense of pain on rotation. Posey emphasizes the frequency with which œdema of the eyelids is encountered even in beginning cases of sinusitis, puffiness being most marked in the upper lid, and particularly on the nasal side. This œdema is entirely non-inflammatory in nature, and is to be distinguished from the inflammatory thickening of the lid in cellulitis. When muscles of the eye are affected, their function is often but slightly interfered with, and diplopia may not be a symptom. Though slight displacements may cause diplopia, the gradual encroachment by the wall of a sinus or the orbital contents may, in chronic cases, be so slow in developing that the visual axes have opportunity to adapt themselves in a measure to the changed conditions under which they operate. Another class of cases described by Posey, are those designated as "prelachrymal abscesses," referring by this term to the swelling which forms at times above the internal palpebral ligament, and somewhat external to the lachrymal sac ; a condition frequently mistaken for abscesses of the sac itself. These prelachrymal abscesses are not seldom due to necrosis of the lachrymo-ethmoidal cells, and in other cases it marks the point of suppuration of the frontal cells with anomalous distribution.

Operations on the Frontal Sinus, Ethmoid Cells, etc.—In our last edition we illustrated and described the operations of Killian and of Delsaux. For the radical operation involving the frontal sinus, ethmoidal cells, sphenoidal cells, sphenoidal sinus—as, for instance, in pansinusitis—or in extensive operations on the frontal sinus and fronto-ethmoidal regions for the removal of malignant neoplasms, Watson Williams commends an osteoplastic operation (*Fig.* 53) which gives very free access to the ethmoidal cells and sphenoidal sinus, as well as to the frontal sinus, and yet avoids the destruction of the nasal bone, etc.

The method requires an initial incision extending along the eyebrow, towards the root of the nose, thence downwards just outside along the middle line. The skin and soft tissues and the periosteum are raised over the anterior surface of the frontal sinus, the size of which can be determined beforehand by skiagraphy, and the anterior wall of the sinus completely removed to within 3 or 4 mm. of the floor. After making a second incision about ¾ in. long, along the inner and lower margin of the orbit, so as to expose the lachrymal groove and duct, the duct is turned outwards and then, with a chisel or burr, entrance is made into the nasal passage. A fine saw having been passed through the nose, so as to come out at this opening (*Plate XXIV*), it is made to divide the

PLATE XXIV.

WATSON WILLIAMS' OPERATION.



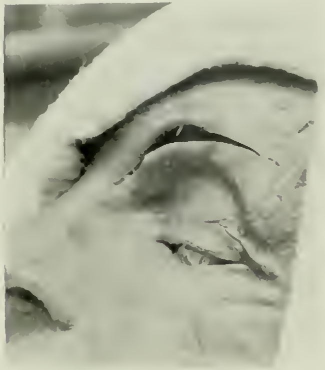
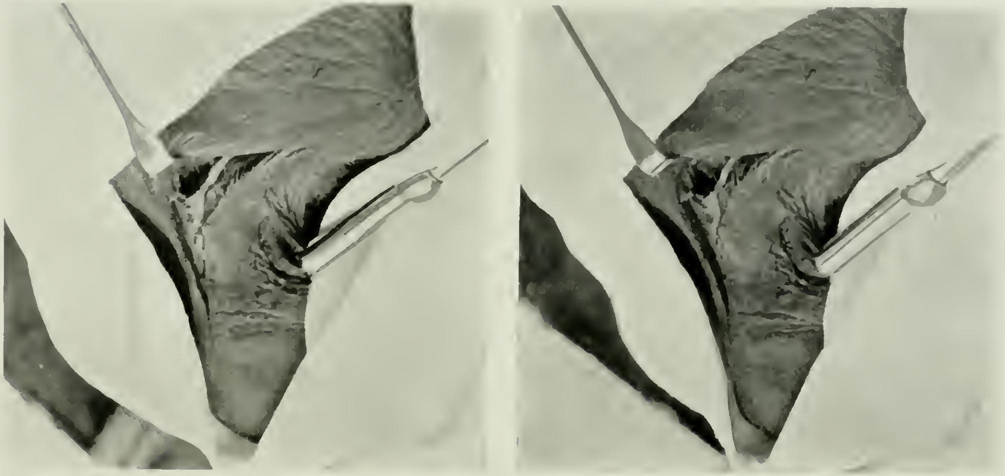


Fig. 2.—To show the line of the main incision.

PLATE XXI.

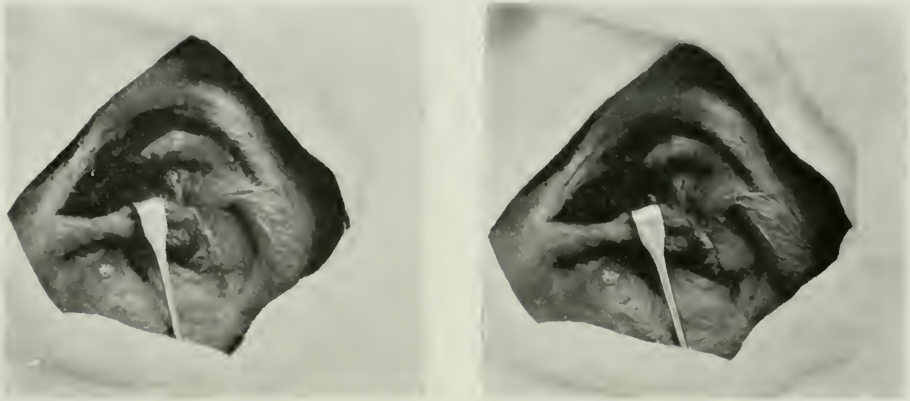
WATSON WILLIAMS' OPERATION.



To show the secondary incision exposing the lachrymal groove. The frontal sinus has been laid open and the anterior wall removed, leaving the lower quarter of an inch. The secondary incision has been made and the lachrymal sac turned outwards, exposing the lachrymal groove, through which an opening is made into the nasal passage.

PLATE XXVI.

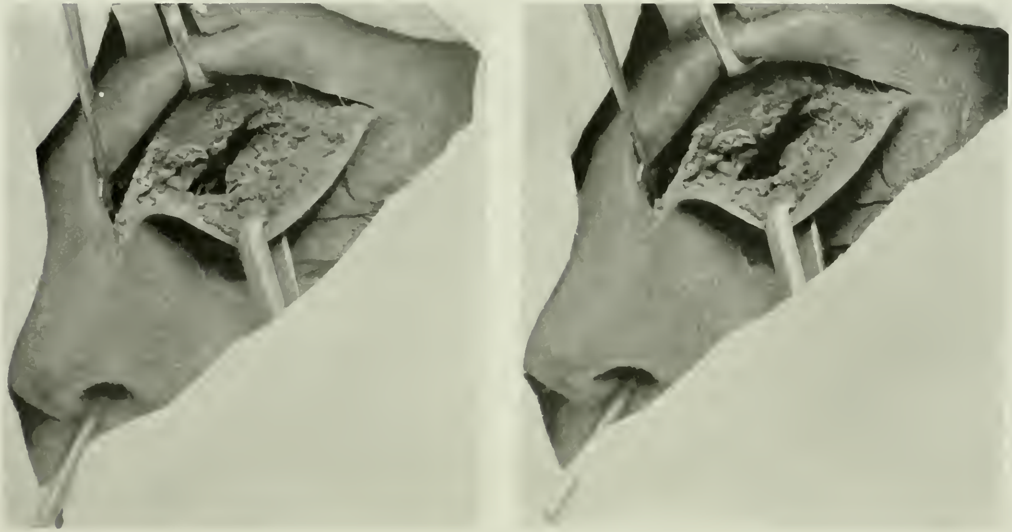
WATSON WILLIAMS' OPERATION



The osteoplastic flap is shown drawn outwards and downwards by the retractor, and the ethmoidal cells have been completely removed down to the sphenoidal sinus. The bottom of the cavity cannot be seen in the figure, as the view is directed towards the septum; but the remains of the insertion of the middle turbinated body can just be seen, this giving the line between the dangerous region of the nasal roof, viz., the cribriform plate, and the less dangerous region to its outer side, viz., the roof of the ethmoidal cells.

PLATE XXVII.

ILLUSTRATING SOME POINTS IN THE OPERATION.



This figure is not actually a part of the operation, as the soft tissues have been separated from the bone flap. It is introduced (1) to show the bone flap; and (2) the method of using (*a*) the saw introduced from below to saw through the nasal process of the superior maxillary bone from within outwards, and (*b*) the saw dividing the nasal bone, etc., near the septal attachment.

nasal process of the maxillary bone : a second saw-cut being next made extending from the frontal sinus down to the lachrymal groove (*Plate XXV*), dividing the bone from behind forwards and leaving the soft tissues intact. The first incision is then completed by means of a saw, extending right through into the fronto-nasal duct. and downwards so as to divide the nasal bone *near* the mid line, but outside the attachment of the septum. The osteoplastic flap is then turned out, (*Plate XXVI*), giving free access to the fronto-nasal passage and ethmoidal cells, which can readily be removed and cleared away if necessary, right back to and including the sphenoidal sinus. The whole of the pyogenic mucous membrane of the frontal sinus, if it is a case of empyema, is then curetted away and any ridges removed, and the cavity packed with an antiseptic preparation of paraffin or wax. The osteoplastic flap is then replaced, and the incisions are sutured. In this way it is possible to get a very free access to the dangerous upper ethmoidal region, even to the sphenoidal sinus as well, if necessary. By packing the frontal sinus in this manner it is possible to avoid a depression which inevitably follows with a deep frontal sinus, when the soft parts are allowed to sink against the posterior frontal sinus wall. Moreover, the mucous membrane of the nose—and of the fronto-nasal duct if deemed desirable—on the inner side of the flap can be saved and turned back into position with the flap. By making the saw-cut from below through the nasal process of the superior maxillary bone, the facial artery is not divided, and thus the

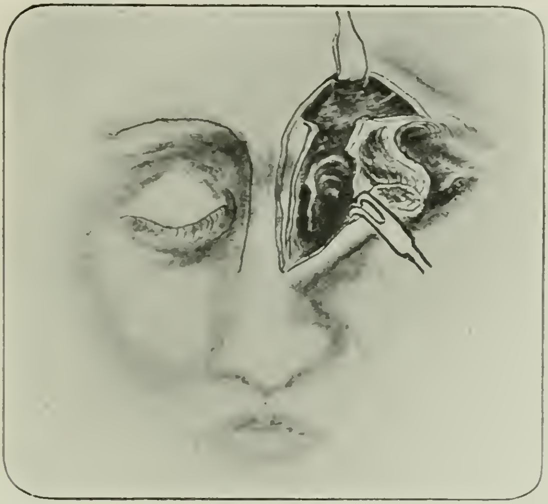


Fig. 53.—Watson Williams' Osteoplastic Operation on the Frontal Sinus, Ethmoidal Cells, and Sphenoidal Sinus. On the right side the line of incision is shown, on the left the operation itself is displayed.

main vascular supply to the flap is not cut off. *Plate XXVII* is introduced in order to show the bone flap and the method of using the saw.

The accompanying illustration (from a photograph) (*Fig.* 54) is of a patient after such an osteoplastic flap operation on the left side had healed.

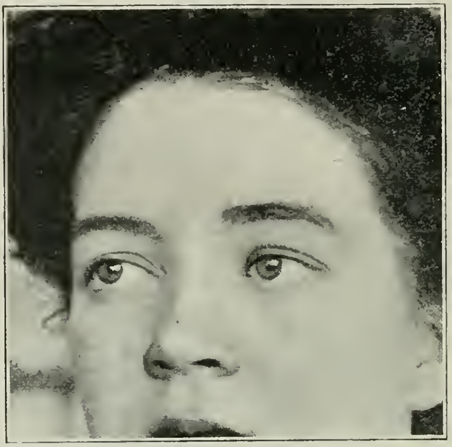


Fig. 54.—Watson Williams' Operation. The Osteoplastic Operation has been performed on the patient's left side. (From an untouched photograph.)

The frontal sinus is not only very irregular in development as regards its size, but also in the manner of its opening into the nose by the fronto-nasal duct. These complicating factors in the diagnosis and treatment of frontal sinus suppuration are diagrammatically illustrated below in *Fig.* 55.

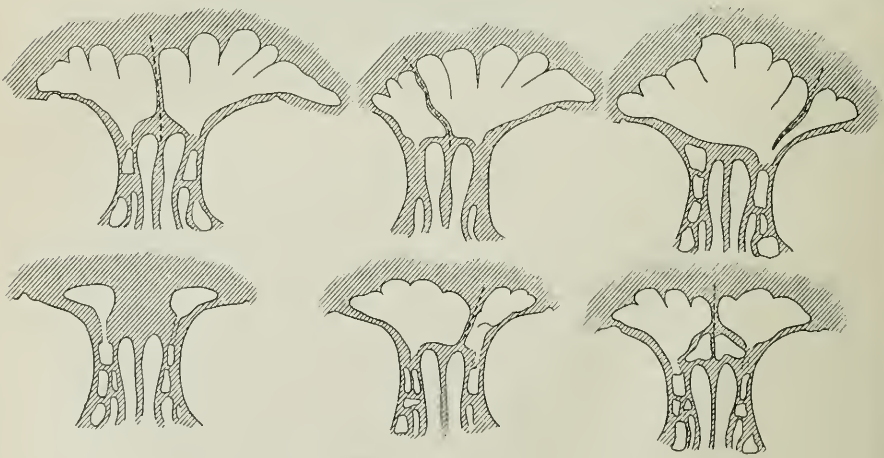


Fig. 55.—Shows the Types of Variations in the development of the Frontal Sinuses.

Sphenoidal Sinus Disease.—In any case where there is reason to suspect the existence of sphenoidal sinus suppuration, it is an immense advantage to have at one's disposal a safe and easy method of setting doubts aside without resorting to removal of portions of the middle turbinated body, measures which are at least undesirable if subsequently found to have been wholly unnecessary.

The blunt trocar and cannula are passed along the floor of the nose till it impinges against the posterior pharyngeal wall; then the distal end is carried forward along the roof of the nasopharynx till it slips up the anterior wall. In this way one gets the point against the anterior wall of the sphenoidal sinus near the lower border. Holding the cannula as nearly horizontal as feasible, it is gently but firmly pressed against the thin anterior wall, which it readily enters (*Figs.* 56 and 57). The cannula is removed and the syringe attached. The contents of the sinus are then aspirated, or some boracic acid solution is thrown in and sucked up into the syringe. If pus is present and the sinus has to be opened, this is done by introducing blunt-pointed cutting forceps in much the same way—the exact distance of the anterior sphenoidal sinus wall and the depth of the sinus itself having been already measured by the syringe-cannula—and as it cuts, it is rotated. In this way the sinus can be opened with comparative ease and safety, as it is only the posterior wall that has to bear the pressure of the blunt end of either syringe or forceps, and this wall is always thick and strong.

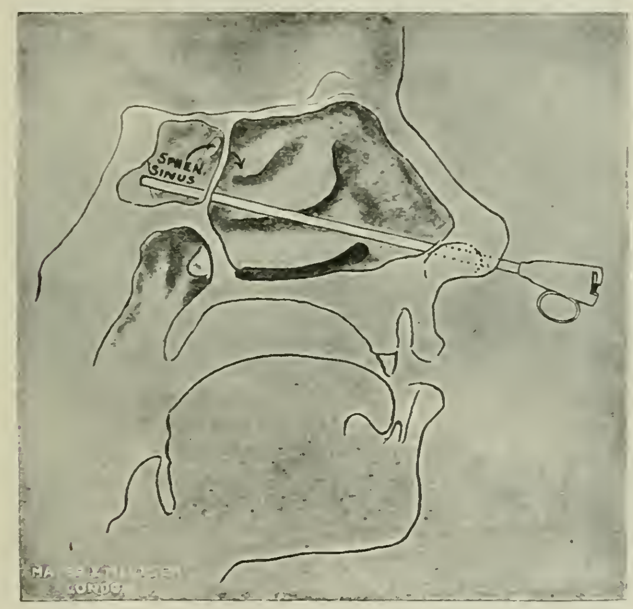


Fig. 56.

The other methods of investigating the contents of the sphenoidal sinus now in vogue usually necessitate the removal of the middle turbinated body in part, unless the nasal passages are already sufficiently patent to give access to the natural ostium, while any of the commonly used patterns of hooks or of cutting forceps require visual guidance The author's method can be adopted in the course of any intranasal operation, even when the nasal passages are filled with blood.

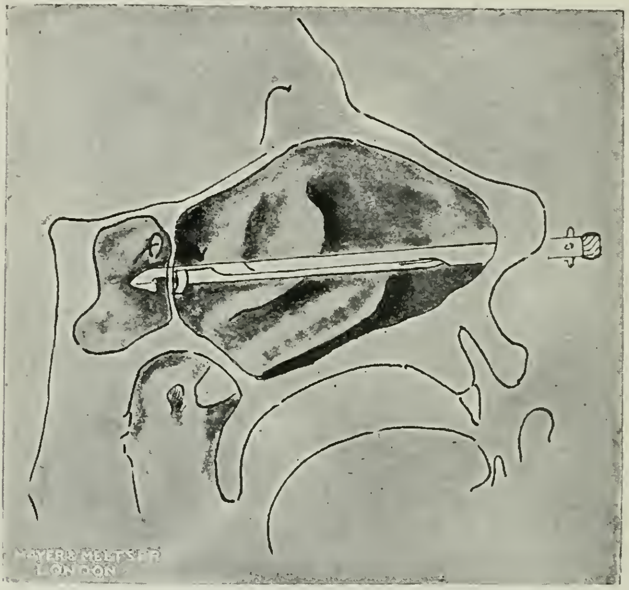


Fig. 57.

References.—[1]*Med. Rec.* Nov. 24, 1906; [2]*Ibid.* Nov. 3, 1906; [3]*Ibid.* Aug. 17, 1907.

NECK, GASEOUS TUMOUR OF.

Priestley Leech, M.D., F.R.C.S.

This is a somewhat rare condition, and is known by various names: the tracheocele of Heister, the thyreocele of Heidenreich, and the ventricular laryngocele of Virchow. The gaseous tumours of the neck are soft, resonant to percussion, often reducible on pressure and on inspiration, generally painless, and in connection with the trachea. Guinard and Guillaume-Leries[1] report a case of this condition. From a study of reported cases they conclude that it is due to expulsive efforts (vomiting, hysterical attacks) with closed glottis, probably predisposed to by weakness of some portion of the tracheal wall, and also arrests of development. Acquired pathological lesions constitute a second group of predisposing causes. Paralytic ectasia of the trachea has been cited by Beusch[2] as one of the causes, where a portion of the tracheal mucous membrane is distended and forms a hernia; in one case, an abscess in the neck was followed by a tracheocele. Finally, the mucous tracheal glands may sometimes become dilated, and after coughing, or some similar effort, the dilated gland may pass through a breach in the tracheal wall. There is another and rare group which is not due to weakness in the tracheal wall, but to actual rupture of the trachea.

The tumours are sometimes in the middle line, sometimes in the left or right supraclavicular fossa; they are round and more or less irregular. The skin over them is usually healthy, but sometimes is covered with dilated veins. Their size varies; those due to weakness of the tracheal wall are not, as a rule, very large, varying from the size of a pigeon's egg to that of a mandarin orange. Those due to effort are often of considerable size. They are influenced by respiration when there is a communication with the respiratory passages; on inspiration they become less or disappear, often with a sort of crackling; forced expiration and extension of the head increase the dimensions of the tumour. They are resonant on percussion, and sometimes give fluctuation. They are painless to the touch. The voice is altered if the communication with the respiratory passages is permanent. In certain cases the respiration may be embarrassed, and some authors have noted dysphagia.

DIAGNOSIS.—They may be mistaken for pneumonocele, subcutaneous emphysema, goitres, and certain arterio-venous aneurysms of the common carotid and the jugular vein, and also laryngocele, which is of small size; phonation is affected, and it is often in the middle line.

TREATMENT.—For a long time these tumours were considered as inoperable, but nowadays removal is indicated; medical means being of no use, except in cases of tuberculous or syphilitic ulceration.

REFERENCES.—[1]*Gaz. d. Hôp.* Dec. 8, 1906; [2]*Breslauer Aerztl. Zeit.* 1880, p. 226.

NEPHRITIS.

J. Rose Bradford, D.Sc., M.D.

Nephritis has often been described in association with various affections of the skin. In many cases the skin disease is secondary to the nephritis, and occurs especially in association with uræmia; but on the other hand nephritis has been observed during the course of various skin affections, and this fact has even been used in support of some intimate relation existing between the functions of the skin and those of the kidney. The skin disease and the renal lesion may sometimes have a common origin, as for instance when due to gout, and some affections of the skin are associated with the development of toxins which might conceivably have an action on the renal elements; but Allan[1] draws attention to the fact that nephritis may follow the use of certain balsams that are employed in the treatment of skin affections. An ointment containing storax used in the treatment of scabies was found to lead to the development of albuminuria; the substitution of sulphur ointment was followed by the disappearance of the albuminuria. In all, five cases were observed where albuminuria followed the use of storax, and the author is of opinion that acute nephritis would have been produced if the ointment had not been omitted. Balsam of Peru has also been known to produce acute nephritis, together with the presence of tube casts and blood in the urine. Allan quotes Richarty,[2] where three applications of a 10 per cent balsam of Peru were followed by the development of nephritis and death in fourteen days. The ease with which certain drugs produce nephritis should lead to caution in their employment in skin affections.

Lépine[3] discusses the question as to whether *meningitis* occurs in association with *renal disease*, and especially in cases of uræmia. Pericarditis in association with uræmia is by no means rare, and opacities and adhesions of the cerebral membranes have not uncommonly been noted in cases of death from uræmia. Lépine records three cases of chronic renal disease: one in a man aged 36, a second in a woman of 45, and a third in a woman of 30, where death occurred from uræmia and definite changes were found in the meninges. The lesions were more especially marked on the convex surface of the hemispheres, where the meninges were thickened and presented areas of intense congestion. In no case were any tubercles revealed after the most careful examination, although in one of the three cases old tuberculous lesions were found at the apex of one lung. Two of the patients presented symptoms suggestive of meningitis during life, especially delirium and retraction of the abdomen; the cerebrospinal fluid was examined by lumbar puncture and showed no excess of lymphocytes. One of the patients died in an attack of convulsions. Lépine draws attention to the fact that pericarditis, although a common complication of Bright's disease, is only seen in cases of chronic renal disease, and he states that he has never observed it in acute nephritis; similarly he emphasizes the fact that meningitis is not seen in acute nephritis, although œdema and ecchymoses are not uncommon: but these are more likely to be the result than the cause of uræmic fits. Lépine is of opinion that inflammatory lesions such as meningitis, pericarditis, etc., are more especially associated with chronic renal disease.

TREATMENT.—Robin[4] considers that each case of Bright's disease should be dieted specially, and that considerable harm may be done by ordering a rigid **Milk Diet** for all cases. He advises that after observations have been made on the quantity of urine and the amount of albumin for two or three days, the patient should be put on a rigid milk diet, and that as much as three litres should be given per diem if this large quantity can be tolerated. In the first few days of such treatment the albuminuria varies considerably in amount, sometimes increasing, sometimes diminishing; but as a rule, after a few days the quantity tends to diminish, and then becomes stationary. Robin thinks that the rigid milk diet should be dropped under the following conditions: (1) When the albumin, after having first diminished in quantity, remains stationary or increases in amount; (2) When the anasarca present undergoes an increase or remains stationary; (3) When the diet gives rise to dyspeptic troubles; or (4) When the milk diet causes either marked constipation or diarrhœa. Under any of these diverse conditions, the milk diet should be changed and replaced by one containing less milk and considerable quantities of vegetables, and in certain instances these in turn may be replaced by a mixed diet of milk, vegetables, and animal food. Robin is of opinion that milk is a useful article of diet in all cases, and that a diet containing eggs often gives rise to less albumin than when meat is substituted for eggs, and, further, that the diet of milk and eggs will often yield a better result than a diet of milk only. With reference to a fish diet, he thinks that it is very essential that the fish should be fresh, and that the discrepancies in the statements of various authors with reference to the value of fish depend largely on this factor. Amongst vegetables, potatoes, rice, and carrots are those which give rise to the least albuminuria, and, the addition of bread to any of these various diets is rarely followed by any increase in the amount of albumin.

REFERENCES.—[1]*Hosp.* April, 1907; [2]*Münch. med. Woch*, May, 1906; [3]*Sem. Méd.* July, 1907; [4]*Gaz. d. Hôp.* Sept. 1907.

NERVES, SUTURE OF.

Priestley Leech, M.D., F.R.C.S.

Sherren[1] reports a very interesting case of secondary suture of the great sciatic nerve three years and nine months after the original injury. The man had wasting and paralysis of the muscles of the leg and thigh, and trophic ulcers and a perforating ulcer on the foot. On incision he found that the great sciatic nerve had been divided at its point of origin from the plexus, and that the third sacral nerve had been destroyed in the wound of the sacrum. The distal ends of both great and small sciatic nerves were bulbous and adherent to the pyriformis muscle. Passing upwards was a dense mass of fibrous tissue into which, after a tiresome dissection, Sherren was able to trace the lumbosacral cord and second sacral nerves, and cut above the mass of fibrous tissue and below the bulbs, the amount removed measuring an inch and a half. The distal end of the great sciatic was sutured to the central end of the lumbosacral cord and second sacral nerve, the junction being enclosed in a decalcified bone tube. The peripheral end of the small sciatic was sutured into a small transverse cut in the great sciatic below the point of union to the lumbosacral cord and second sacral nerves. Six weeks after the operation a prick was appreciated over nearly the whole of the small sciatic nerve area, and a week later sensibility was restored over the whole of this area. While he was kept at rest the perforating ulcers healed.

After division of a peripheral nerve, loss of sensibility occurs under three headings: (1) *Deep sensibility*, tested by pressing with a blunt object: it can only be investigated over areas insensitive to prick; (2) *Protopathic*, i.e., sensibility to prick, to ice, and to water above 50° C.; (3) *Epicritic*, i.e. sensibility to light touches with cotton wool and temperatures between about 20° C. and 40° C.

After division of many nerves, sensibility to deep touch is unaffected, and care must be taken that pressure is not made when testing for protopathic sensibility. After a division of a peripheral nerve there is a large area of loss of light touch, a smaller loss of sensibility to prick, and a still smaller loss of sensibility to deep touch. The last form of sensibility to be restored is that of exact localization, tested by the ability of the patient to appreciate as to the points of a pair of compasses when separated to the distance normally appreciated on that part of the body; this power may be regained after primary, but is rarely if ever restored after secondary, suture.

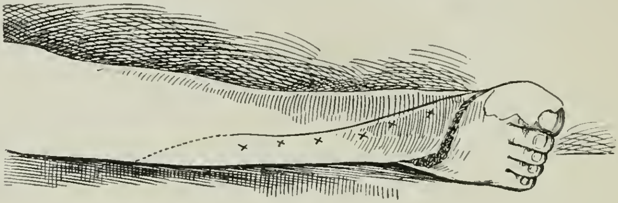


Fig. 58.

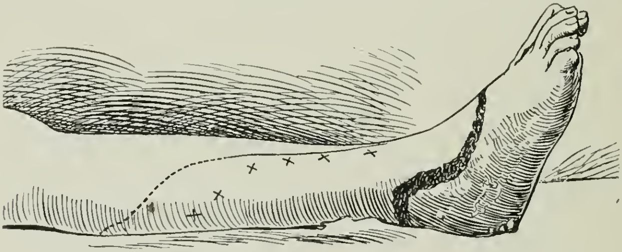


Fig. 59.

In injuries to nerves, unless care is taken to investigate the action of individual muscles, and not certain movements which one believes these muscles perform, many cases of nerve injury will be missed, and mistakes made in interpreting results. As an example, in Sherren's case the patient learnt to flex his knee by the aid of the gracilis alone. Six months after the operation deep touch was appreciated, and well

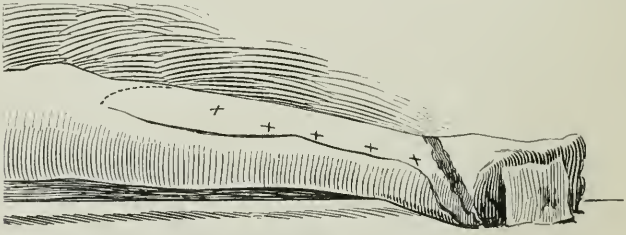


Fig. 60.

localized over the whole of the affected area, sensibility to prick has been restored to the leg, but the foot still remains insensitive to the stimulus. The area of loss of sensibility to light touch remains as extensive and well-defined as before the operation. The accompanying illustrations (*Figs.* 58–63) show the areas in which sensibility was lost.

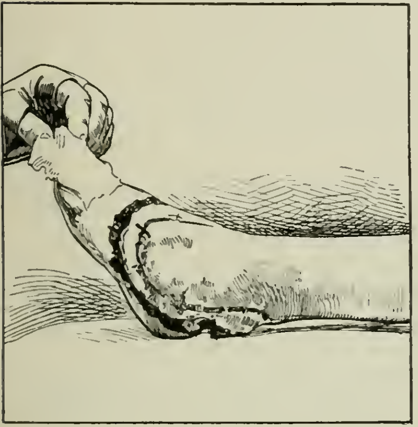


Fig. 61.

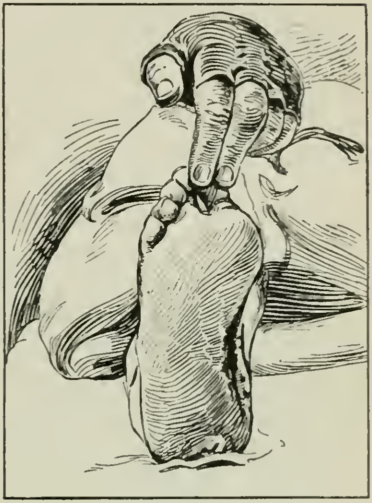


Fig. 62.

Figs. 58, 59, 60, 61, and 62 show the Loss of Sensibility produced by Division of the Great Sciatic Nerve. Within the area bounded by the thick line all forms of sensibility were absent. Within the area between the thick line and the crosses, deep touch was appreciated and localized, but there was loss of protopathic and epicritic sensibility. Within the area bounded by the crosses and the thin line, epicritic sensibility only was absent.

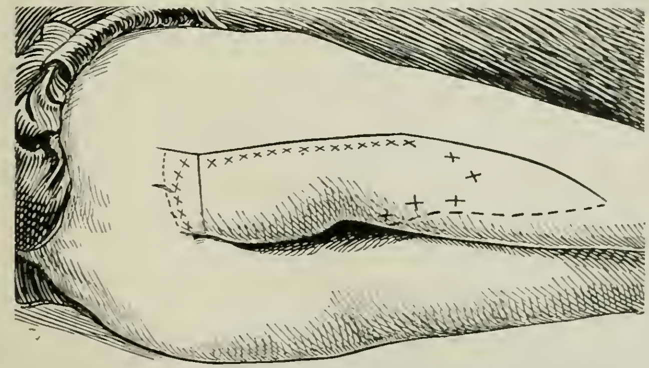


Fig. 63.—Showing Loss of Sensibility produced by Section of the Small Sciatic Nerve. Over the whole of this area deep touch was appreciated and localized. The crosses mark the area within which protopathic and epicritic sensibility was absen the line, the area of loss of epicritic sensibility.

REFERENCE.—[1]*Brit. Med. Jour.* Feb. 18, 1907.

NEURALGIA, TRIGEMINAL. (*See also* PASSIVE HYPERÆMIA, *p.* 71.)

Priestley Leech, M.D., F.R.C.S.

In a paper on this subject, Moschowitz, of New York,[1] reviews the treatment and pathological findings of the disease. His conclusions are somewhat against the removal of the Gasserian ganglion ; and he sums up the treatment as follows :—

1. Eliminate any possible etiological factors, such as tumours, carious teeth, antral disease, malaria, syphilis, etc.
2. Determine accurately the nerve branch or branches involved.
3. The operation should be as near to the periphery as possible.
4. It should be performed early. This is very important, because the earlier the case the more chances there are that a peripheral operation will be of benefit.
5. Whatever the operation, the dominant principle must be the *prevention of regeneration* of the nerve. The operations may be classified under two headings, depending on the nerve or nerves affected :

(*a*) *Peripheral Operations.*—If the supraorbital, infraorbital, mental, malar, or inferior dental branches, either singly or collectively, are involved, the operation consists in division of the nerve, and plugging up of the foramen by a gold or silver button or wire.

(*b*) *Central Operations.*—If the neuralgia involves the upper teeth and palate (superior maxillary division) or tongue (inferior maxillary division), existing either singly or together with the other nerves mentioned above, the operation, as outlined by Abbe, must always be performed, substituting, however, celluloid or a gold button for rubber tissue.

6. If the above principles of treatment are carried out, he believes that the operation of extirpation of the Gasserian ganglion will become entirely unnecessary.

Martin, of Baltimore,[2] reports eight cases of removal of the Gasserian ganglion for this disease, with two deaths, one from pneumonia and one from shock brought about by hæmorrhage at the time of operation. Two were done by the Hartley-Krause method with the osteoplastic flap, but the bone was not replaced ; others were done by the lower incision, followed by division of the zygoma, and the skull opening made low down in the temporal fossa.

REFERENCES.—[1]*Med. Rec.* Sept. 29, 1907 ; [2]*Ann. Surg.* May, 1907.

NEURASTHENIA, TROPICAL. *Purves Stewart, M.D.*

The health of white men who emigrate to tropical countries, and their capability to withstand the climate, are questions not merely of medical, but of imperial interest. In view of the number of patients who return to their native land in a state of nervous exhaustion, and in view also of others who fall a prey to diseases which, in a state of average health, we should ordinarily expect them to resist, the question of tropical hygiene for the white man is of great importance.

Fales,[1] who has had opportunities of studying the effects of the tropical climate of the Philippine Islands upon white American troops and colonists, has made a number of valuable observations on this subject. He and others were impressed by the terrible nerve-exhaustion which results from prolonged exposure to tropical heat. especially if the climate be moist as well as hot. Officers, civil servants, business and professional men, often suffer, not only from physical fatigue, but from mental exhaustion, frequently rendering them unfit for their duties and diminishing their powers of resistance to intercurrent diseases. According to Fales, nearly all the white women and a large proportion of the white men who have lived in the Philippine Islands for a year or longer, suffer from neurasthenia ; 50 per cent of the women and 30 per cent of the men are so severely affected as to be semi-invalids. Such persons are unable to concentrate their minds on their work, their memory fails, they are very easily fatigued, and they ultimately become totally unfit for the work which at the outset they had accomplished with ease. In the Philippines, with the moist tropical heat, neurasthenia incapacitates more white men than all other causes put together. Neurasthenia, in fact, is the main hindrance to the ability of white races to become acclimatized to the tropics.

Tropical neurasthenia has certain characters peculiar to itself. Thus, for example, women suffer from menstrual derangements, in the form of menorrhagia, metrorrhagia, and dysmenorrhœa, to a greater extent than they do in temperate climates. Vasomotor phenomena are specially common in both sexes, e.g., angioneurotic œdema, pemphigus, localized sweatings, etc. In addition to these special features, the signs of ordinary neurasthenia occur as usual.

Etiology.—Several factors contribute to induce tropical neurasthenia. Firstly, the mode of life among white men in the tropics is often injudicious. The white man attempts, unwisely, to perform a daily routine similar to that to which he was accustomed at home ; he goes out in the sun without adequate protection, and takes no midday siesta. Secondly, certain endemic diseases, such as dysentery, dengue, etc., if they attack white men, have a marked effect in lowering the powers of resistance.

Excess of alcohol, again, is undoubtedly deleterious, whatever views be held as to its use in moderation. (The "tropical liver," which we English physicians have to treat, is generally an alcoholic liver). Further, there is the direct actinic effect of tropical light upon a white-skinned man. According to v. Schmädel's theory, the actinic rays of the solar spectrum are highly injurious to living protoplasm. As we go farther south, the light becomes more intense and the actinic rays become more powerful. The inhabitants of tropical countries, to counteract the increased actinic power of their climate, have gradually, in the process of centuries, developed a large excess of protective pigment in the skin. Dark-skinned races are the result. Persons with blonde complexions going from a temperate to a tropical climate are found to be more sensitive than brunette types, possibly because their metabolism is stimulated to such an extent that the various functions of the body become exhausted, and neurasthenia results. The last factor of importance is the action of continuous moist heat, whereby, whilst the patient perspires to a severe degree, evaporation from the skin is but slight, and the skin is kept constantly hyperæmic. This tends to produce anæmia of the internal organs, including the central nervous system. Thus vertigo and faintness are particularly common, and inability to remember or to concentrate one's mind.

Another curious point on which Fales lays stress is, that large men are more likely to become neurasthenic than little men ; this may be due to the larger skin surface which exists in the large man, proportional to his body-weight.

Be the explanation what it may, it is an accepted fact that white races do not become permanently acclimatized to tropical countries. White children born, for example, in India or the Far East, have to be sent home to their mother-country if they are to be robust in later life. If white families settle in tropical countries and live there continuously through several generations, the resulting stock tends to be puny and feeble, both in body and in mind.

Prophylaxis and Treatment.—From what has been stated above it is evident that certain persons are particularly unsuitable for tropical emigration. Such for example are blondes, large men, people of neurasthenic tendencies, women and children. Tuberculous individuals are also liable to an exacerbation of their disease if they go to settle in a humid tropical atmosphere.

Amongst those who do settle in tropical climates, certain hygienic rules are of great importance. Direct sunshine, with its powerful actinic rays, should be avoided. This is best accomplished by wearing a pith or cork helmet, impervious to the actinic rays. The outer garments should be white, and the under-garments may with advantage be made of some black material, of light texture. During the evenings of the cold season, flannel underclothing should be worn, to prevent too rapid cooling. The mid-day siesta should not be omitted. Excessive heat production from muscular activity is thus prevented during the hottest hours of the day ; also the strong mid-day sun is avoided. A nourishing diet is of great importance, carefully avoiding excess in alcohol, and during the hottest months of the year a change should be taken, either to the hills, or in the form of a sea voyage.

Fortunately tropical neurasthenia responds more readily than ordinary neurasthenia to treatment. Change of climate is specially efficacious, so that the Anglo-Indian who is invalided home often astonishes his anxious relatives by the good physical condition in which he reaches his native shore.

Reference.—[1]*Amer. Journ. Med. Sci.* April, 1907.

NEUROSES, THE.

Purves Stewart, M.D.

The boundary between organic and so-called "functional" diseases of the nervous system is an imaginary one. A neurosis is commonly defined as a nervous affection devoid of anatomical changes, but it is impossible to conceive a disease without some underlying physical basis. The lesion may not be visible microscopically; it may be molecular or biochemical, but it is none the less real. In functional diseases the underlying physical changes are slight in degree, and they are not irreparable, unlike diseases due to gross anatomical lesions, which always leave behind them some trace of the old trouble. With advancing knowledge the number of diseases included under the heading of neuroses has steadily diminished. Thus, for example, tabes, exophthalmic goitre, and chorea, which were at one time classed as neuroses, have been transferred to the group of organic affections, whilst there is little doubt that epilepsy and paralysis agitans, in view especially of their progressive nature, should also be separated from the group of neuroses proper.

Three affections are included within the category of the neuroses properly so-called. These are neurasthenia, psychasthenia, and hysteria. Hysteria is a familiar affection and does not call for special discussion in the present article. Several new points, however, have arisen with regard to neurasthenia and psychasthenia. Raymond has recently discussed these diseases in an interesting series of lectures.[1] The distinction between *neurasthenia* and *psychasthenia* is one of great practical importance. Neurasthenia, like dyspepsia, is a syndrome rather than an actual disease. Its chief phenomena consist in "irritable feebleness," with general depression of all the functions of the nervous system. Psychical symptoms, if present, are simple and elementary. The general nervous depression is manifested in undue fatigue, instability, restlessness, excessive emotion, and depression of spirits. Neurasthenia is a comparatively simple, acquired affection, which is usually curable under proper treatment. It may be produced by a variety of depressing influences, whether organic or otherwise. Psychasthenia, on the other hand, is a more serious affair, in which mental phenomena occupy the foreground. Further, whereas neurasthenia is generally a disease of adult life, the result of some accidental cause, physical or mental, enfeebling the nervous system, but which, on passing off, leaves the patient practically normal, psychasthenia, on the contrary, is the culmination of a congenital predisposition, whose indications are first evidenced in childhood or adolescence, and whose symptoms develop to full maturity without apparent exciting cause. The future psychasthenic is naturally a listless, neuropathic person, anergic, full of fads and scruples, and he always retains certain permanent psychasthenic stigmata.

Neurasthenia.—In neurasthenia proper there is an "irritable feebleness," with depression of the functional activity of the whole nervous system, including its psychical, sensory, motor, vasomotor, and even trophic functions. No two cases are alike, and there is an infinite multiplicity of symptoms. Most of the symptoms are subjective, and cannot be verified by the physician; but we also find a certain number of objective physical signs, constituting the stigmata of the disease. Of these, the most important are headache, insomnia, nervous and muscular asthenia, pains in the spine, gastro-intestinal dyspepsia, mental depression, and so on. Amongst the less constant signs are asthenopia, vertigo and various affections of hearing, sensory disturbances of various sorts, and disorders of the circulatory, respiratory, vasomotor, and genital systems. The psychical condition of the neurasthenic patient is one of mental depression. He is too easily fatigued, he cannot sustain his attention for any prolonged mental effort; yet his memory is not impaired, he is still able to reason calmly on ordinary subjects. He is, however, unduly emotional, trifles worry him, and he may have vague fears and apprehensions without apparent cause.

Neurasthenia is not a primary disease, but a result of something else, and we should always search for its underlying cause. The commonest cause is physical or mental over-strain, especially the latter; but accessory causes may also have an aggravating influence. Excess in alcohol, tobacco, or other drugs, poisoning by the toxins of various fevers, especially influenza, or by endogenous poisons as in diabetes and gout, may all precipitate an attack of neurasthenia. It is important also to remember that organic diseases are often associated with neurasthenic symptoms; such organic diseases may either be in the nervous system, as in tabes, or in other systems, as in chronic rheumatism, arteriosclerosis, viscero-ptosis, and so on. Finally, traumatic neurasthenia, especially from railway accidents, is a well-known forensic variety. Neurasthenia may develop in a previously healthy individual, but neuropathic individuals are specially liable to the disease, their power of resistance being below par.

The treatment of neurasthenia would require a volume for its adequate discussion. The essential principles of cure are complete change of environment, physical and mental rest, simple and nutritious diet, careful attention to intestinal elimination, massage, baths, and electricity. It is in cases of this type that the well-known rest-cure achieves its most marked successes.

Psychasthenia.—The credit of recognizing this clinical entity and of pointing out its diagnostic features belongs to Janet, of Paris. The outstanding features of psychasthenia are the various forms of obsession and "phobia," apprehensions, tics, and aboulia or want of initiative power. As isolated symptoms, these have been familiar to neurologists and psychologists for many years, but Janet was the first to focus them in a single group, included under "psychasthenia."

In a recent lecture Raymond[2] has discussed the chief symptoms of psychasthenia, a disease which is to be clearly marked off from neurasthenia. In psychasthenia the most important symptoms are psychical, and may be divided into three main groups: obsessions, imperious acts, and the psychasthenic "stigmata."

1. The obsessions of psychasthenic patients are almost always of a depressing character, e.g., hypochondriasis, impulses of sacrilege, of crime, of feeling of shame, etc. These obsessions may be of the most varied form, but they have certain characters in common. Firstly,

the obsession is involuntary and automatic ; the patient is equally unable to prevent its appearance or to make it disappear. The obsession, when it arrives, is irresistible, and dominates the mental field. Further, it is alien to the normal course of the patient's thoughts, and interferes to a serious extent with his mental processes ; so much so, that whilst under the influence of his obsession he is incapable of thinking of anything else. It is a curious fact that the idea is frequently one which is repulsive to the patient, e.g., the obsession to kill the very person to whom he is most devotedly attached. Another important characteristic of the obsession is its tenacity and its tendency to reappear. It has paroxysms followed by remissions, but it is always lurking, ready to break out. After it has lasted a certain time, it produces a sort of psychological craving, so that the patient cannot get it out of his mind. Further, a very distinctive feature is the fact that it is recognized by the patient as being a morbid idea, but with this there is a dulling of the critical faculties to some extent, so that the patient is not really fully cognizant of its real morbidity. Again, the obsession has a tendency to be transformed into an active performance. When this occurs, we talk of an "impulsive" idea. But the impulse is rarely carried to its logical conclusion. Thus the obsession of suicide is frequent, but attempts at suicide are uncommon, and effective suicides are still more rare. It seems as if the impulsive tendency is often successfully resisted. The varieties of obsession which seem most difficult to resist are the impulses to steal (kleptomania), to drink (dipsomania), and to perform sexual acts. These may, however, be partly explicable on other grounds, e.g., the mania of collection in kleptomania, the appetite for alcoholic stimulation in dipsomania, and the force of sexual instinct in the sexual pervert. The last characteristic of the psychasthenic obsession is its incompatibility with hallucinations of any sort. If hallucinations are superadded, the patient must be separated from the category of psychasthenia and placed definitely in that of insanity.

2. The next great diagnostic feature of psychasthenia consists in the occurrence of "imperious acts" (*agitations forcées* of Janet). These may be of the most varied types, e.g., the mania to perform a certain action, the mania of repetition, the tics, useless movements, phobiæ, and apprehensions. Janet divides these imperious acts into groups, according as they consist of mental, motor, or emotional processes.

Firstly, as to imperious mental acts or mental manias. These include the mania of interrogation, of hesitation, of fussy tidiness, of numbers (arithmomania), of seeking, of explanation, and so on. These are all systematized mental acts. Contrasted with these there are non-systematized or diffuse forms of mental agitation, consisting in a jumble or mixture of the various manias above mentioned—so-called mental rumination ; the patient, when he has to make any decision or perform any action, keeps on discussing in his mind all the possible hypotheses, reasons for and against, and the possible consequences of his act, to such an extent that he finishes by doing nothing: a sort of mental sterility.

Forced motor mental processes may be systematized or non-systematized. The former include the different varieties of tics. Most tics are connected more or less directly with mental manias, and are often merely the motor evidence of an underlying obsessional idea. Diffuse or non-systematized forced mental processes include "crises" of walking, talking, general motor unrest, or even wild and complex choreiform or hysteroid movements.

Forced mental acts of the emotional variety include the innumerable phobiæ, such as agoraphobia, claustrophobia, metallophobia, aichmophobia (fear of sharp objects), hydrophobia, toxicophobia, rupophobia (fear of dirt), ereuthophobia (fear of blushing), fear of performance of organic functions, of illness, of death, of certain animals, and so on. A feature common to all these is that, together with the repulsion for an object or an act, there is also a co-existing attraction, sometimes very intense, towards that same object or act. This mixture of attraction and repulsion is one of the causes of the agitation and apprehension which accompany the various forms of phobia. Besides the systematized phobiæ we may also meet with a diffuse or generalized state of anxiety, a sort of panophobia or state of apprehension. But whether the phobia be systematized or diffuse, it is accompanied by physical symptoms of varying degree, e.g., cardiac, respiratory, or digestive disorders, vertigo, muscular spasms, vasomotor phenomena, etc.

3. The third group of symptoms comprises the "stigmata" of psychasthenia. They constitute the real *raison d'être* of the other symptoms. Some of them are psychological, others are physiological. There are two categories of psychological stigmata. The first, purely subjective, are called by Janet the sentiments of incompleteness; the second, more objective, are "symptoms of insufficiency" evidenced in the patient's conduct.

As to the "sentiments of incompleteness," all psychasthenics feel themselves to be hesitating, irresolute, and timid. The mere idea of an act to be performed appals them, so much are they convinced of their inability to produce any practical result. To such a degree is the feeling of decision and resolution deficient, that even when they have performed the desired act they have a feeling of automatism, as if they were mere machines. As a result they have a constant feeling of self-distrust, of timidity and discouragement, which may produce complete inertia. This same feature is manifested in intellectual as well as in physical acts. Mental work appears well-nigh impossible; they cannot make the effort to fix their attention without having a feeling of mental distress; they exist in a state of generalized doubt, and have to fly to others for mental support. Meanwhile they complain that their emotions are wanting in reality, they have a feeling of indifference towards everything—a sort of mental torpor. Finally, in some cases, we meet with a psychasthenic doubling of personality, which differs from the dual personality of certain hysterics in the fact that whereas in hysteria the duality is an alternating one, unknown to the patient, in psychasthenic duality the patient feels himself double: his two personalities do not alternate, they coexist.

The second category of psychological stigmata, the "symptoms of insufficiency," are evidenced in the patient's actions. The psychasthenic is awkward, slow and clumsy; his every action tends to be inharmonious. Even the gait of such patients is abnormal: it is stiff, devoid of grace and swing, sometimes slow, sometimes jerky and unnatural. Even at rest, his attitudes are full of affectation, he "poses" in most extraordinary ways. These abnormalities of movement are exaggerated in the performance of specially skilled and delicate acts (professional anergia), also in the performance of new acts which require efforts of attention, and lastly in acts which have to be performed in public (social anergia). Finally the aboulia becomes complete, and the patient is unable to initiate the simplest actions. With all this, his powers of memory remain acute; in fact, he is continually thinking about useless minutiæ of the past. His emotions are almost always retrospective, and incidents in the present which are unconnected with his obsession make little impression on him; thus he is hardly moved by normal emotions, whether agreeable or otherwise; he is in a state of indifference as regards his present environment. A second emotional change in these psychasthenics consists in the various modifications of sentiment, the result of the disorders of intelligence and of action to which we have already alluded; the patient is depressed, he has a craving for being directed in his actions by someone else, or a craving for affection, or, what is more pernicious, a craving for excitement—a craving which often induces the patient to fly to an artificial stimulant such as alcohol or morphia.

The physical symptoms of psychasthenia, broadly speaking, are the same as in neurasthenia, and may affect all the systems of the body. Amongst the nervous symptoms there are neuralgias of all sorts, especially common in the head. Together with these the patient complains of other sorts of curious cephalic sensations, difficult to describe, e.g., sensations of fullness, tension, looseness, emptiness, creaking, screwing, sawing, etc. Feelings of faintness and of giddiness are not uncommon. Insomnia is frequent. Digestive troubles are the rule. Digestion is slow, the patient complains of distention, eructations, pyrosis, constipation, foul breath—all the symptoms, in fact, of gastro-intestinal atony. The arterial tension is often diminished, attacks of palpitation, alternate blushing and pallor, etc., occur, and he often complains of vasomotor and secretory phenomena, such as excessive sweating, commonly on the hands and feet, or abnormal dryness of the skin. The sexual functions are commonly diminished, whilst spermatorrhœa is particularly common. Meanwhile the general nutrition is poor, and the patient is commonly ill-nourished.

References.—[1]*L'Encephale*, 1907; [2]*Bull. Méd.* 1907, Nos. 30 and 36.

NEW-BORN, DISEASES OF. *Prof. G. F. Still, M.D., F.R.C.P.*

Fever.—Butler[1] discusses the occurrence of fever in new-born infants. It seems clear that some rise of temperature is not uncommon in the first few days of life, but there is considerable discrepancy between the statements of various writers as to the frequency and significance of this occurrence. The temperature immediately after birth has been found to vary between 99·8° and 100·2° F. in the rectum, being about half a degree higher than in the mother; then it falls one to three degrees, owing to the cooling of the surface, the bath, and exposure; then after some hours it rises again to 99·2° F. to 99·8° F. About the fourth day it falls to about 98·8°, and then rises again, reaching 99·2° F. on the eighth day. From these normal variations of temperature there is a wide departure in some cases. For instance, Butler describes a case in which an apparently healthy infant, whose temperature had been 99·8° F. at the end of the first twenty-four hours, showed a temperature of 105·6 F. on the fifth and sixth days, and some remittent fever for several days afterwards; the mother had plenty of milk after the third day; the infant showed nothing abnormal except some coryza and excoriation of the navel. He lost weight during the fever. In another case, where the temperature reached 104·4 on the fourth day, there was coughing, sneezing, and complete anuria after the fourth day for six days, followed by death with convulsions on the tenth day. In an infant, whose temperature reached 106° F. forty-eight hours after birth, there was coughing and sneezing, and the infant micturated only once in the twenty-four hours for three days during the fever. Holt attributed the fever of the new-born to lack of fluid food, and pointed out that the fever often disappeared rapidly after lactation was established. Butler considers this view improbable, as starvation in infancy is associated with subnormal temperature, unless some infection is present. Gross considered that the fever was often due to putrefactive changes in the cord, or inflammatory processes in the navel; while in some cases it was due to gastro-intestinal disturbance. It has been shown by the observations of Epstein, and also of Gross, that careful antiseptic measures reduce the mortality of infants from septic infection soon after birth, and the latter observer showed that there was a corresponding diminution of the occurrence of fever in the new-born. Butler, therefore, argues that the fever of the new-born is probably due to some infection rather than to starvation. There are obviously numerous possibilities of infection during birth, both by entrance of septic material into the mouth and nose, and also by swallowing of such material. In Butler's case the occurrence of coryza seemed to be due to nasal infection, and he attributes the fever to an acute rhinitis and pharyngitis. The suppression of urine is regarded as secondary, and associated with the presence of the so-called "uric acid infarcts" in the tubules.

TREATMENT.—Butler advocates **Antiseptic Douching** at the onset of labour, in the hope that in this way the bacteria which are known to occur in the mouths of new-born infants may be diminished in number. It is possible that contaminated amniotic fluid may be responsible in some instances for infection of the respiratory and gastro-intestinal tracts, and on this account Epstein advised that digital examination should be as seldom as possible after rupture of the bag of waters. Careful antisepsis in treatment of the stump of the cord is also of great importance. Having regard to the infective character of the fever, it is advisable that an infant with such pyrexia should not be placed in a ward or room with other infants. He should be sponged or bathed if the fever is high; water, or small doses of **Potassium Citrate** should be given frequently; and enemata of **Salt Solution** or **Sodium Bicarbonate**, about 2 oz., may be administered every six hours. The nares may be swabbed three or four times daily with **Boric Acid** solution.

Salivary Infection.—This affection is very rare; it is obviously closely allied to the oral and nasal infection already described. Durante[2] mentions three cases in which the salivary glands became acutely inflamed in new-born infants. In one case the parotid became swollen on the fifteenth day and suppurated, and the pus was found to contain staphylococci. In another, on the tenth day, the sublingual gland suppurated, and the pus showed Pfeiffer's influenza bacillus. In a third, the submaxillary became inflamed, on the fifteenth day there was slight fever, and the infant died; the gland showed only hæmorrhagic inflammation. In all these cases Durante considered that the infection had entered through the mouth.

Tetanus Neonatorum.—Amongst the infections which may enter through the umbilical stump, Porak and Durante[3] mention tetanus of the new-born. This is not of common occurrence, fortunately, for it is very fatal. The symptoms appear usually on the fourth day, lock-jaw appears on the seventh day, and the child generally dies on the eighth day. Cases, however, are not always fatal; Fedele[4] reports the case of an infant whose cord had been cut with a common scissors with no antiseptic precautions. On the sixth day some difficulty in sucking was noticed, and on the eighth day there was definite trismus, and then general tetanic convulsions. Recovery occurred after a duration of the tetanus for forty days.

TREATMENT.—In this case the infant was placed in a dark room and kept quiet. Two warm baths were given daily, and a 3 per cent solution of **Phenic Acid** in sterilized oil was injected four to ten times daily into the buttocks in doses of a "Pravaz syringeful." The injections were continued for forty days. **Tetanus Antitoxin** has been used in this disease without success. **Chloral** in 1-gr. doses, frequently repeated, has given good results in some cases. It may be advisable to cauterize the stump of the umbilical cord to destroy any tetanus bacilli which may be present here. In an older child (a boy aged eight years) Murphy,[5] after failure with anti-tetanus serum, succeeded with injections of a solution of **Beta-Eucaine** and **Morphine Sulphate** into the theca spinalis.

Sclerema and Œdema Neonatorum.—This rare condition, characterized by the occurrence of patches of thickening in the substance of the skin, so that in parts it feels like leather, occurs either at birth, or within a few days after. It has been regarded very generally as an affection of feeble, puny infants. Addenbrooke[6] describes an extremely rare occurrence, under this name. A twin boy and girl born at the eighth month were strong and apparently healthy, but small. On the second day the girl showed swelling of the feet, which became hard and waxy in appearance, and this condition spread so rapidly that next day it reached the head; the child then died. On the third day the boy showed similar swelling, which also spread; and he died three days later. Such a condition is probably not a true sclerema, but rather the condition which is known as "œdema neonatorum," a disease also of feeble infants and, like sclerema, very usually fatal. But it is not always so, for Sobel[7] reports a case in which the sclerema appeared, or at any rate was first noticed, on the third day; at the end of five and a half months the patches of induration had almost gone, and a month later the skin was quite normal. Welt-Kakels[8] also reports a case in which improvement was occurring in an infant aged seven and a half weeks. In both, as is usual, the patches of induration were chiefly over the shoulders, the back, and the upper part of the limbs. Welt-Kakels points out that this disease is most often seen in infants with feeble heart action and subnormal temperature, and especially in premature infants, whereas, in the case recorded by him, the temperature was 101°, and the child was full-term. Fox[9] reports a case in which sclerema was still present at the age of ten months, having been noticed first at one month. He thought it should be regarded as an infective condition, and that with the improvement of hygienic conditions the disease has become much more rare than it was.

TREATMENT.—In Sobel's case (loc. cit.) the treatment, which was followed by recovery, was prolonged inunctions of **Mercurial Ointment,** after a preliminary short course of **Iron** administration, in the form of a powder of calomel $\frac{1}{10}$ gr., ferri carb. sacch. $\frac{1}{2}$ gr., three times a day; and, subsequently, **Hot Baths** and **Massage with Sweet Oil,** were used. In Welt-Kakels' case also improvement occurred with hot baths.

Hæmorrhage in the New-born.—Internal bleeding may, of course, occur in the new-born, as at any other age, from traumatism, for instance, from pressure of the forceps; but under the name "hæmorrhage of the new-born" are usually included only the spontaneous hæmorrhages which occur during the first week of life. Machell[10] reports fourteen cases; in all except two the bleeding began within the first three days; and in nearly all the infant appeared well until the bleeding began. In all cases the bleeding began quite gradually, and usually was from more than one source, for instance, from stomach, bowel, and umbilicus, or into the abdominal cavity, or suprarenal capsules. The temperature in some was raised; there was rapid wasting in most. Eight out of thirteen cases in which the result is mentioned were fatal. The outlook is always grave. Townsend, in a large series of cases, found the mortality to be 79 per cent. Machell states that while a large and sudden gush of bleeding obviously makes the prognosis very bad, a slight amount of bleeding does not necessarily diminish the gravity of the affection. Convulsions are of serious significance ; but one of his cases had three convulsions and yet recovered.

Machell points out that the etiology of this condition is very obscure : hæmophilia, septic infection, syphilis, too early ligation of the cord, ulceration of stomach or bowel, feeble coagulability of the blood, some defect in the walls of the blood-vessels—all these, and other causes, have been asserted to play a part. Some cases, he thinks, are certainly of septic origin. It has been pointed out[11] that a great variety of micro-organisms have been found at autopsies, so that, at any rate, the infection can hardly be a specific one.

Machell says that it is safe to predict that if these infants recover they will not show any hæmophilic tendency in later years ; but it seems probable that hæmophilia, though very rarely, may be the cause of this hæmorrhage in the new-born ; for Larrabee[12] has recently reported a case in which death occurred on the fifth day after birth, with hæmorrhages in the skin, mucous membranes, and cord ; in the family history of this patient there were fifteen known cases of hæmophilia.

Treatment.—Machell says that there are three drugs which are thought to be of use at the present time ; **Calcium Chloride, Solution of Adrenalin,** and **Gelatin.** Of the adrenalin solution (1–1000) 1 min. doses may be given by mouth every hour or two hours. The gelatin is used as a 2 per cent solution, which may be obtained in this form :—

℞ Gelatin Alb. (Merck) gr. xxx | Aq. dest. ℥iij
Sod. Chlorid. gr. ij |

Of this 1 or 2 dr. are to be given every hour or two hours by the mouth. If there is bleeding from the rectum, it is advisable to give the gelatin also by rectum. It has been used hypodermically, and one observer had recovery in five consecutive patients with hypodermic injections of a 2 per cent solution of gelatin, which had been boiled for six hours and allowed to cool to 100° F., when 15 cc. of the solution were injected. Abt, however, has shown that there are serious dangers attending the subcutaneous injection of gelatin, which in children may produce fatal toxæmia.

References.—[1]*Pediatr.* Oct. 1906, p. 612 ; [2]*Arch. Gén. de Méd.* Aug. 1905, in *Pediatr.* Oct. 1906, p. 649 ; [3]*Arch. de Méd des Enf.* in *Pediatr.* Jan. 1906, p. 51 ; [4]*La Pediatr.* June, 1905, in *Pediatr.* Oct. 1906, p. 650 ; [5]*Jour. Amer. Med. Assoc.* Aug. 1904, p. 460 ; [6]*Brit. Med. Jour.* Aug. 25, 1906, p. 428 ; [7]*Arch. Ped.* 1905, p. 264 ; [8]*Pediatr.* Jan. 1905, p. 33 ; [9]*Brit. Jour. Derm.* Jan. 1904, in *Brit. Jour. Child. Dis.* i. 239 ; [10]*Canad. Jour. Med. and Surg.* April, 1907 ; [11]*Lancet,* May 25, 1907 ; [12]*Amer. Jour. Med. Sci.* Mar. 1907, in *Arch. Ped.* June, 1907.

NIGHT SWEATS.

Many drugs are recommended, among them the following : (*Vol.* 1899, *p.* 42)—**Hydrastinine Hydrochloride.** (*Vol.* 1900, *pp.* 373, 399)—**Thallium Acetate** (gr. iss–iij in pills) given an hour before the sweats occur, not more than four days following ; **Camphoric Acid,** gr. xx–xxx in cachets, given 2–3 hours before the sweating ;

Tellurate of Sodium, gr. ⅓–1 per diem ; **Strychnine** in the usual doses ; **Lead Acetate** gr. 1½ per diem. (*Vol.* 1902, *p.* 458)—External applications may be used ; for instance, **Tannoform**, as a dusting powder, or ℞ Balsam of Peru, 1 part ; Formic Acid, 5 parts ; Chloral Hydrate, 5 parts ; Trichloracetic Acid, 1 part ; Absolute Alcohol, 100 parts. (*Vol.* 1903, *p.* 521)—For children, **Formalin**, 5 to 10 per cent, in linseed or olive oil, may be rubbed in and wiped off with a towel.

NIGHT TERRORS.

(Leonard Guthrie, *Index of Treatment, p.* 583)—Treat errors of refraction, adenoids, and anything causing physical pain. The bed must be comfortable, and the room well ventilated. Protect the child from over-education and emotional stress ; let him have a night-light in the bedroom. Give **Potassium Bromide**, gr. v–x, an hour or two before bedtime, with or without **Chloral Hydrate**, gr. iiss–v. Treat rheumatic children with **Salicylate of Quinine** by day. Constipation is to be met with **Rhubarb** or **Castor Oil**, and anæmia with **Ferri et Ammon. Citrat.** For children with mucous diarrhœa, or with enuresis and highly acid urine, as well as night terrors, give **Citrate of Potash.**

NIPPLE, FISSURE OF.

(*Vol.* 1900, *p.* 112)—**Orthoform** in strong alcoholic solution is valuable as it is a strong antiseptic, and induces local anæsthesia after a short period of smarting. It has neither taste nor smell. **Potassium Permanganate**, 2–5 per cent solution, used several times daily, heals the cracks in about a week. (*Vol.* 1900, *p.* 374)—**Mabbatt's Preventive Treatment** consists in a thorough kneading of the nipple with **Lanolin** every night for 4 to 6 weeks before confinement. Every morning the nipple is washed with soap, warm water, and a nailbrush, then rinsed with fresh water.

NOMA VULVÆ.

(Herman, *Diseases of Women, p.* 494, 1903 *Ed.*)—Get rid of the whole necrotic part with the **Actual Cautery**, and treat the surface thus formed with frequent application of **Carbolic Acid Lotion**, 1 to 2 per cent.

NOSE, DISEASES OF.

P. Watson Williams, M.D.

Plugging the Posterior Nares.—For all intranasal operations under a general anæsthetic, it is a great convenience to have a readily adjustable postnasal plug (*Fig.* 64). The author has devised a post-nasal forceps for carrying a postnasal tampon. A tongue-hook also can be used to draw forward the tongue, and it is attachable to the forceps. All blood is prevented escaping to the pharynx during the operation, and the patient never complains of the tongue after the operation, as in the case where tongue forceps are used for any length of time.

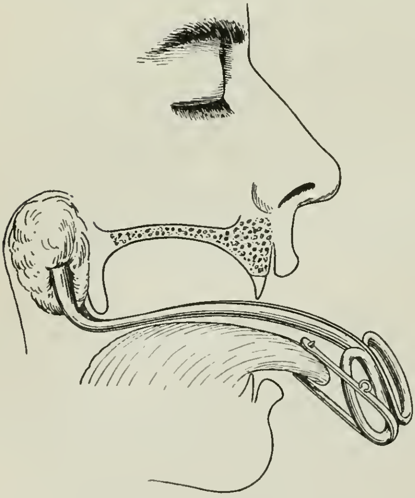


Fig. 64.—Postnasal Plug.

A method, known to rhinologists, has been described by Ogier Ward,[1] and as it will remind us of one of the best methods of introducing a post-nasal plug for hæmorrhage, we quote as follows : " Pass the usual double thread (preferably of silk) through either nostril, using for the purpose an eyed probe, if the surgeon possesses one of sufficient length. Such an implement is a nearer approach to a Eustachian catheter in calibre than a Bellocq's sound or any urethral catheter; as all aurists soon learn, even a small Eustachian catheter sometimes fails to pass. Repeat the process through the other nostril with a fresh thread. The loose ends hanging from the mouth are now tied to each other and round a plug of gauze or of lint, and are cut short. By pulling on the ends hanging from the nostrils, and aided by a finger in the mouth, the plug is dragged up behind the soft palate, and more or less to one posterior nostril as may be necessary. Next (if required) plug one or both anterior nares, thread the silk ends through a piece of rubber tubing, and tie either in front of the nose or across the cheeks and behind the neck. Keep these ends long, so as to control the plug when, next day, it is pushed back into the mouth for removal. By this plan the discomfort to the patient is reduced to a minimum." [The Editor would suggest the use of a longer instrument, for instance, a small-sized male gum-elastic catheter, for carrying the thread through the nose into the back of the mouth, as it is not so easy to get the thread to hang down into the mouth from the eyed probe, which only reaches a short distance beyond the posterior choanæ.]

Nasal Headache.—The possibility of headache being directly due to pathological conditions of the middle turbinal alone is borne out by cases recorded by Wyatt Wingrave[2] and by Smurthwaite.[3] Wingrave, by removal of a nævoid, cured a young man of severe and persistent frontal pain, extending to the vertex and occasionally to the corresponding eye. The pain was of three months' duration, varying in intensity, but never ceasing. There was marked hypertrophy of the anterior end of the right middle turbinal, associated with septal deflection, sufficient together to cause complete blocking of the nasal passage. Smurthwaite relates cases with similar symptoms and methods of cure, but in whom there was either acute inflammatory swelling of one middle turbinal, or else pressure by that body against a deflected septum. He describes the following symptoms due to these conditions of the middle turbinal: "A tightness across the bridge of the nose as though the nose was being compressed in this position; a feeling of pressure above the eyes in the region of the frontal sinus; pain radiating from the inner canthus and side of the nose down the side of the face to the infra-orbital canal, or upwards and outwards to the supra-orbital canal; in a circle round the eyes, with lachrymation; finally, pain starting from the root of the nose and inner angle of the orbit, and passing up over the forehead and scalp to the occiput."

REFERENCES.—[1]*Brit. Med. Jour.* June 15, 1907; [2]*Jour. Laryng. Rhinol. and Otol.* Aug. 1906; [3]*Ibid.* Nov. 1906.

NYMPHOMANIA.

(*Vol.* 1905, *p.* 336)—Savage prescribes a nocturnal draught containing **Ext. Salicis Nigræ,** ʒj, with **Potassii Bromidi,** gr. xxx.

OBESITY.

Von Noorden's dietetic plan is as follows: 8 *a.m.*, 3 oz. cold lean meat, 1 oz. bread, a cup of tea or coffee with a little milk but no sugar. 10 *a.m.*, 1 egg. *Noon*, soup without fat. 1 *p.m.*, a small plateful of clear soup, 5 oz. lean meat or fish, 3½ oz. potatoes, green vegetables, 3½ oz. fresh fruit. 3 *p.m.*, a cup of black coffee. 4 *p.m.*, 7 oz. fresh fruit. 6 *p.m.*, a glass of skimmed milk. 8 *p.m.*, cold lean meat, 4½ oz.; wholemeal bread, 1 oz.; 2 or 3 spoonfuls of fruit without sugar. Banting's diet was simpler, but less sustaining: *Breakfast*, 4 or 5 oz. meat or fish, 1 oz. toast, tea without sugar or milk. *Dinner*, 5–6 oz. lean meat or fish, any vegetable except potatoes, 1 oz. dry toast, stewed fruit, 2–3 glasses of claret. *Tea*, 2–3 oz. fruit, a rusk or two, and a cup of tea. *Supper*, 3–4 oz. meat or fish. Forbid all pickles and condiments.

OCULAR PAIN.

(*Vol.* 1899, *p.* 412)—When due to errors of refraction, bathe the forehead and eyes with **Menthol**, gr. xxx; Spirits of Rosemary, Spirits of Lavender, and Brandy, of each ℥j. (*Vol.* 1902, *p.* 23)—The violent pain experienced in cases of iritis, corneal ulcer, and glaucoma, is relieved for some hours (after a period of smarting) by instillation of **Dionine**, 5 per cent, into the conjunctival sac.

ŒDEMA (Circumscribed).

E. Graham Little, M.D., F.R.C.P.

Morichau and Beauchamp[1] claim that three varieties of this affection may be distinguished:—

1. *Arthritic Œdema*, in which subcutaneous swellings are found in association with joint-affections, of the type of rheumatism. These swellings are of transient duration, and are prone to disperse and reappear. They may also take the form of white œdematous patches, which do not pit on pressure, and come and go with great rapidity.

2. *Peliosis Rheumatica.*—In this, hæmorrhage takes place as well as œdema, and the lesions are more persistent.

3. *Quincke's Disease.*—In this type, there is no hæmorrhage; the skin and mucosæ are involved, often very rapidly and extensively; the colour of the skin is not altered. The face is most liable to be attacked; the tongue, fauces, and mouth are often swollen as well. The larynx may be concerned in the swelling, and this complication is dangerous. Vomiting, colic, and diarrhœa are generally present during the attacks.

All these varieties of acute circumscribed œdema are probably closely connected, in the opinion of the writers, and have a common origin in toxic infections derived from the alimentary canal. **Milk Diet** and full doses of **Aspirin** are recommended.

Theodore Fisher[2] records a singular case in which recurrent œdematous swelling of the hand, in a girl aged thirteen, was noted for a period of nearly seven years, the condition having started with a blow on the hand. The œdema was accompanied by hæmorrhage both in the original and subsequent attacks, which occurred about three times a year. The hand felt cold and dead before the swelling appeared in these subsequent attacks. Sometimes the index and middle finger of the affected hand would become semiflexed and rigid, and there was tenderness of the vertex of the scalp. Fisher regards this case as an instance of hysterical swelling, and quotes a record of Charcot's with a similar history. He also mentions another case of his own occurring in a girl aged eleven, in whom "very great swelling of the fingers and dorsum of the left hand" occurred, which was repeated during two years; in the later attacks the left leg also was swollen, and the patient complained of premonitory tingling and pain, and persistent muscular weakness of the hand and leg.

References.—[1]*Ann. de Derm. et de Syph.* Jan. 1906, p. 22; [2]*Pract.* Oct. 1, 1906, p. 474.

ŒDEMA NEONATORUM. (*See* New-born, Diseases of.)

ŒSOPHAGUS, DISEASES OF.

P. Watson Williams, M.D.

Œsophagoscopy (*Direct Examination of the Œsophagus*).—Much useful information on direct œsophagoscopy is afforded by Paterson[1] and by Stuart Low.[2] The former finds Rosenheim's tubes the most convenient, while Low states that the best tubes are those improved by Killian. Rosenheim's tubes are rigid, thin, and slightly thickened at the end to avoid injuring the mucous membrane. The preparation of the patient, which is described by Stuart Low, and which he emphasizes as essential for the performance of œsophagoscopy, involves loosening of the clothes, so that the neck can be straightened and the head hyper-extended and steadied by an assistant without the patient feeling any constriction, and respiration can be carried on freely. The stomach should be empty for some time previously. As vomiting even then may occur when the tube comes into contact with the cardiac aperture, the stomach contents may flow into the tube, and require mopping or sucking out with a pump, or if the patient is in the horizontal position, the vomited substance will be got rid of by lowering the patient's head. Cocainization should be thorough, and be aided in application by the laryngoscope. Artificial teeth-plates should, of course, be removed. Low reminds us that it is very important that œsophagoscopy should always be preceded by careful examination with graduated bougies in order to discover the seat of the disease, and that the right length of tube be chosen. If no obstruction is found, the longest tube is employed, so as to reach the cardia, and by gradually withdrawing the tube, every part of the œsophagus can be inspected.

The selected tube, containing the hard-rubber sound with conical tip which occludes the tube, is warmed and lubricated. The base of the tongue is drawn forward by the left hand, and the instrument, held in the right hand, is made to glide over the epiglottis and down the œsophagus. Should it not pass down into the stomach, the rubber sound is withdrawn, and Caspar's or Killian's lamp pushed into position and fixed over the orifice of the metal tube. By this good illumination the tube can be kept in the centre of the lumen of the œsophagus and pushed towards the cardia should no abnormal obstruction exist. After it has reached the cardia the tube is withdrawn, and all parts successively brought into view. Paterson generally uses a gum-elastic bougie, which exactly fits the tube, as a pilot, withdrawing the bougie as soon as the tube has entered the œsophagus, its further progress being guided by the eye; but with the smaller-bored tube he never makes use of a pilot, as guiding by the eye is more precise. He finds Killian's suction pump of much service for removing mucus in the tube; in other cases irrigation is very helpful. Paterson, who has illustrated the various foreign bodies he has himself removed from time to time by direct œsophagoscopy, concludes that "œsophagoscopy is the most certain method in the diagnosis and extraction of foreign bodies, and should be adopted as early as possible. Other methods, such as the use of bougies, coin-catchers, etc., should be avoided as not without danger, and under no circumstances should they be used where a sharp body or the existence of a stricture below the body is suspected."

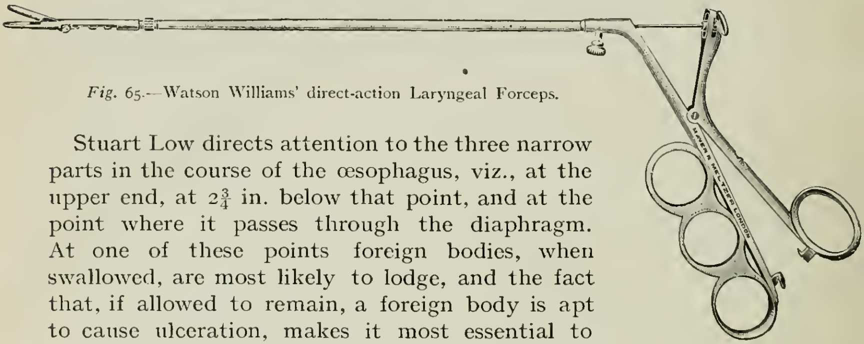


Fig. 65.—Watson Williams' direct-action Laryngeal Forceps.

Stuart Low directs attention to the three narrow parts in the course of the œsophagus, viz., at the upper end, at $2\frac{3}{4}$ in. below that point, and at the point where it passes through the diaphragm. At one of these points foreign bodies, when swallowed, are most likely to lodge, and the fact that, if allowed to remain, a foreign body is apt to cause ulceration, makes it most essential to remove it as soon as possible, this being best accomplished by special forceps (*Fig.* 65) introduced through the œsophageal tube. He also explains some of the hindrances to the passage of the tube, and reminds us that the lower portion of the thoracic aorta is situated towards the right and posteriorly, and only on reaching the diaphragm does it turn forward and to the left.

X-Ray Detection of Foreign Bodies.—Macintyre[3] concludes from a considerable experience that with the efficient employment of both X rays and direct examination comparatively few foreign bodies in the upper respiratory tract can now escape detection. But he has found that all the head lamps at present in use have the disadvantage of yielding too poor a light, and he commends highly Von Schrötter's newly-devised method of illuminating passages of the body, which he describes as follows: "Professor Schrötter advocates the principle of a glass rod in the same way as the small dental instruments known as radiant spatulæ (*Fig.* 66). A solid glass tube could not be used in the case of the trachea or œsophagus, as instruments have to be passed through it, but the external surface of a glass tube acts in the same way as a solid cylinder for the transmission of light, even if the side be very thin. A glass tube is taken of the necessary width for the passage to be operated upon, gradually decreasing from the end, which is formed conically, and a glow lamp is brought to the side of it, and so we have a very serviceable instrument. To make it complete, however, it is necessary to exclude the light, and so a short tube is fixed to the holder in which the glass tube is inserted. Schrötter uses several small glow-lamps in the same holder, the film in each being made of osmium, giving a maximum of light and a minimum of heat. These four lamps are placed round slightly-indented glass tubes, and connected with wires to the source of energy. Cooling arrangements are not considered necessary. To concentrate the light the tube is silvered on the one side and blackened on the other, so that the eye looks through a dark tube while the light appears at the distal end at the point where it is required to examine the object. The intensity of the light is very great, and an inspection of the deeper parts is quite possible, even small tubes giving enough light to allow an operation in a greater depth, and in the small bronchi. The patient is not troubled with heat, darkening of the room is not necessary, and the operation generally is much simplified. The same instrument can be used for the ear, nose, mouth, or throat, and with modifications of the tubes it can also be used for the internal cavities of other parts of the body. The design of the instrument will be better understood by referring to the diagrammatic representation above."

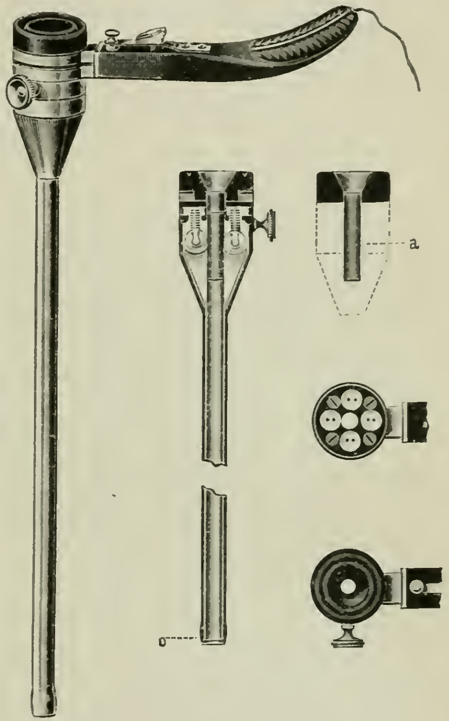


Fig. 66. Professor von Schrötter's new instrument for direct examination of the cavities of the body.

REFERENCES.—[1]*Brit. Med. Jour.* Aug. 12, 1906; [2]*Hosp.* Jan. 12, 1907; [3]*Jour. Laryng. Rhinol. and Otol.* Aug. 1907.

ŒSOPHAGUS (Foreign Bodies in).

(*Vol.* 1906, *p.* 340)—Two novel methods are here described. In one case, the two parts of a **Seidlitz Powder** were given separately, and the patient's mouth and nose closed. The mass (a large lump of meat) was driven into the stomach in a few minutes. In two other cases **Teazed Cotton-Wool** was given in articles of food; this either envelops the foreign body, or mats the fæces together around it, and allows of its being passed. (*Vol.* 1890, *p.* 376)—Crégny recommends patients to swallow a skein of thread inside a comfit; attached to the thread is a stout cord, 18 in. to 20 in. long, by which the foreign body may be fished up when the skein has wound itself around it.

OPHTHALMOPLEGIA. (*See* EYE-MUSCLES.)

OPTIC NERVE, DISEASES OF. *A. Hugh Thompson, M.D.*

Optic Neuritis.—The beneficial effect on the sight of trephining the skull in some cases of optic neuritis is now established (cf. *Medical Annual* for 1906, p. 345). We are now beginning to hear of similar good effects from **Lumbar Puncture.** The effect varies, of course, with the cause of the neuritis. In many cases of cerebral tumour it could hardly be expected to be more than merely temporary. On the other hand, out of five cases of meningitis in which vision was affected, and for which lumbar puncture was performed in Paris, Babinski and Chaillous[1] report that one was cured, three were permanently benefited as to the sight, and in only one was the benefit transitory.

Optic Neuritis and Sinus Disease.—The amount of attention that has been paid in recent years by rhinologists to disease of the nasal accessory sinuses finds a parallel in the fact that ophthalmologists are realizing to an increasing extent that a good deal of eye disease is also due to this cause. Fish[2] finds recorded about a hundred cases in which optic neuritis has been coincident with sinus diseases, the sinuses involved being either the sphenoidal, ethmoidal, frontal, or maxillary. Three years ago Fish began to examine the nostrils systematically in all his cases of optic neuritis. In a series of thirty-six cases sinus disease was found to be present twenty-six times, and in fifteen cases improvement of the ocular condition followed drainage of the sinus. In others improvement was impossible owing to optic atrophy having already intervened. This writer suggests that the cases of optic neuritis which follow measles, scarlet fever, and influenza, as well as those which follow an ordinary cold in the head, are really due to the involvement of one or more of the nasal sinuses. This hypothesis, he says, would explain the appearance of the ocular lesion, as a rule, during convalescence, or, in some cases, long after recovery. Since syphilis also is a frequent cause of sinus empyema, optic neuritis attributed to syphilis may really be due to the sinus disease which it causes. Though optic neuritis due to disease of one or more of the sinuses is usually unilateral, it may also be double, and since in closed sinus disease there may be no visible intranasal discharge, and the prominent symptoms may be dizziness, headache, and vomiting, it is not improbable that a wrong diagnosis of cerebral tumour has often been made in these cases. Therefore, in all doubtful cases a thorough examination of the nasal sinuses must be made, and if necessary treatment should be directed towards draining these cavities. (On this subject cf. SINUS DISEASES, in *Medical Annual*, 1907, p. 496.)

Toxic Amblyopia.—*Methyl-alcohol Poisoning* is a subject of which we know little in England, but in America the case is different. In 1904 Casey Wood, in conjunction with the late Dr. Buller, collected 275 instances of toxic amaurosis and death due to wood alcohol; and at the meeting of the British Medical Association at Montreal[3] the same authority gave many further instances of blindness or death following a drinking bout in which this poison had been used. The intoxicant, he says, is nearly always the so-called "purified" or "deodorized" form of wood alcohol (generally Columbian spirits). employed either as "mixed drinks" or as an adulterant of or substitute for ethyl-alcohol. The symptoms are always acute, and are thus described by Casey Wood:—

"Usually within twenty-four hours after the absorption of the poison, either by the stomach or by inhalation of the fumes mixed with rebreathed air, the patient complains of nausea, vomiting, abdominal distress, weakness of the extremities, pallor of the face, and coldness of the hands and feet. He generally has severe headache. difficulty of breathing, and partial unconsciousness, which may deepen into coma, and be followed in twenty-four to forty-eight hours by convulsions and death.

"The eyesight, when large doses are taken, suffers more or less in the majority of instances. although it may remain good for several days, and may not be affected until almost every other sign of the intoxication has passed off. Whether it shows itself early or late, whether partial or total, it is almost always followed in a few days by more or less complete return of vision; in some cases central acuity may again become normal. After a time. however, in spite of this apparent improvement—often attributed to the effects of treatment—sight again becomes defective. the patient sees less and less, and as a rule becomes totally and permanently blind. The visual fields are generally contracted, and absolute central scotomata can be mapped out. At this stage of the intoxication the pupils are widely dilated and do not respond to light or accommodation.

"The characteristic ocular lesion is an optic neuritis, which is generally recognizable by the mirror in the early days of the intoxication. The optic outlines are blurred, there is some papillary œdema, and the central vessels are distinctly engorged. These organic alterations correspond closely to the symptoms. The onset of the neuritis gives rise to the primary blindness. As soon as the acute papillitis subsides, vision somewhat improves, to be followed by a post-neuritic atrophy and permanent loss of sight.

"It is well to remember that methyl intoxication is an example of idiosyncrasy. It is not everybody who drinks even large quantities of wood alcohol, say 5 or 6 oz. within an hour or two, who is permanently injured thereby. Of ten individuals so indulging, all will exhibit signs of intoxication, and four will die, two of them becoming blind before death. Of the survivors, two will be permanently blind from optic atrophy."

As to *treatment* of the condition there is little to be said. On the question of *prophylaxis*, however. Casey Wood's remarks are eminently practical. "He has," he says, "often urged the futility of simply labelling methylated products 'poison' as a means of preventing people from drinking diluted Columbian, Columnian, or standard wood spirits, or from using them to adulterate whisky, lemon extract, Jamaica ginger, or other spirituous mixtures. These deadly forms of 'deodorized' wood alcohol too closely resemble in taste and smell ordinary grain alcohol. As a consequence, they often overpower the prudence of him who drinks and the honesty of him who manufactures. In my judgment, the only effective remedy is to render unprofitable the sale and manufacture of every form of deodorized methyl-alcohol. This can readily be accomplished in Canada, as it has recently been in the United States, and as it has for years been done in Great Britain, Germany, France, and other countries."

REFERENCES.—[1]*Sem. Méd.* Aug. 14, 1907; [2]*Brit. Med. Jour.* Nov. 2, 1907; [3]*Ibid.* Dec. 29, 1906.

OPTIC THALAMUS—THE THALAMIC SYNDROME.

Purves Stewart, M.D.

Paroxysmal pain of hemiplegic distribution is the outstanding feature of lesions localized to the optic thalamus, as has been pointed out by Dejerine and Roussy. [1] Cases of pure thalamic lesions, however, are far from common, and we must bear in mind that post-hemiplegic pain occurs in many other varieties of hemiplegia. Thus, for example, ordinary hemiplegia, from a lesion anywhere in the pyramidal tract, is often followed by pains in the joints and muscles of the paralyzed limbs. Such pains are commonly due to secondary arthritic changes, often of rheumatic nature, and they are generally alleviated by anti-rheumatic remedies, by massage, and hydrotherapeutics. Joint thickenings and adhesions can often be demonstrated in these cases, and their diagnosis presents no special difficulty. Less commonly, we meet with cases in which pains in the limbs precede the attack of hemiplegia. The explanation of pre-hemiplegic pains is still obscure.

Still more uncommon are the cases of post-hemiplegic pain unassociated with joint-changes: the so-called *hemiplegia dolorosa*, which is characteristic of a lesion in the optic thalamus. In such cases the pain is not localized to the neighbourhood of certain joints, but affects the corresponding side of the face, trunk, and limbs. The pain is more or less continuous, with paroxysms of agonizing intensity. Moreover it is absolutely intractable and resistant to all remedies. Massalongo[2] records a typical example of the disease, in which the autopsy showed a small focus of softening in the right optic thalamus. The patient during life had shown typical symptoms of left-sided hemiplegia dolorosa, with hemi-choreic and hemi-athetoid movements of the affected limbs, and hemi-ataxy on voluntary effort, together with marked diminution of sensation to all forms of stimulation, both superficial and deep. In cases of this kind motor weakness is comparatively slight and tends rapidly to improve, whilst the hemi-anæsthesia, and still more the hemiplegic pains, are persistent. The deep reflexes are unchanged or but slightly increased, and the plantar reflex is of the normal flexor type. Occasionally transient tenesmus of the bladder is observed. Although the number of cases of this kind is as yet small (Roussy has only collected thirteen in all), the syndrome is unmistakeable and of great clinical importance.

REFERENCES.—[1]*Rev. Neurolog.* 1906, No. 12; [2]*Il Policl.* Aug. 1907.

ORAL SEPSIS.

(*Vol.* 1905, *p.* 439)—A list of agreeable antiseptic mouth washes and dentifrices is appended. *Mouth Washes:* (1) Salol, 10 grams; Spirits of Scurvy-grass, 40 grams; Spirits of Lavender, 40 grams; Spirits of Mint, 20 grams; Spirits of Lemon, 20 grams; a teaspoonful in a glass of water. (2) Resorcin, 8 grams; Salol, 8 grams; Spirits of Lavender, 120 grams; a teaspoonful in a glass of water. *Dentifrices:* (1) Vegetable Charcoal, 5 grams; Magnesium Carbonate, 20 grams; Sodium Bicarbonate, 2½ grams; Salol, 2½ grams; Essence of Mint, 10 cgrams. (2) (A white one) Boric Acid, 5 grams; Magnesium Carbonate, 10 grams; Powdered Chalk, 10 grams; Essence of Roses, 5 drops.

OSTEOMALACIA.

(*Vol.* 1906, *p.* 40)—**Protylin**, a phosphorized albumin, is recommended for this disease. (*Vol.* 1892, *p.* 355)—**Oöphorectomy** has appeared to cure, or at least relieve, those cases in which it has been tried.

OSTEOMYELITIS.

Priestley Leech, M.D., F.R.C.S.

Kerr, of Chicago,[1] reports a case of extensive osteomyelitis of the tibia, where he removed all infected bone, sutured the edges of the periosteum together except at the ends, and drained. He placed the leg on a splint to prevent deformity. After suppuration has ceased he destroys the upper tibio-fibular joint, causing ankylosis at this point, and he divides the lower end of the fibula on a level with the upper surface of the lower epiphysis (or, if this is destroyed, at the level of the astragalus), and places the end of the fibula either on the lower epiphysis or the astragalus, thus substituting the fibula for the tibia as the pressure-bearing bone. He quotes the following conclusions of Nichols: (1) Drainage of the soft parts is not sufficient: the bone marrow is often infected, and must be drained; (2) A portion of the cortical bone must be removed by the trephine; (3) Curetting of the bone-marrow should not be done, as it causes extensive destruction of the endosteum; (4) Operate as early as possible; (5) In the subacute stages remove the necrotic shaft completely, or partially at an early stage; for mechanical reasons the manipulation of the periosteum is easier after ossification has begun but while the membrane is still plastic, and the rapidity and surety of perfect regeneration seem greater at that time; (6) Early performance of an operation, and removal, as far as possible, of all infected areas, lead to an earlier success.

For Prophylaxis, *see* Passive Hyperæmia, *p.* 77.

Reference.—[1] *Ann. Surg.* Sept. 1907.

OVARY, DISEASES OF.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

The Value of the Ovary.—Bland-Sutton,[1] in an interesting paper, discusses the value of the ovary from the surgical standpoint. The presence of as little as 15 gr. of ovarian tissue is sufficient to maintain menstruation and prevent the troubles of the menopause. His practice leans strongly towards conservatism in surgical dealings with the ovaries and their associated organs. The experiments of Bond[2] on rabbits showed that the removal of the uterus did not prevent the occurrence of ovulation and œstrus. The author himself has constantly advocated the practice of conserving the ovaries when performing hysterectomy. Crewdson Thomas, studying the after-histories of 100 women who had had hysterectomy performed on them, found that the conservation of one or both ovaries was of striking value in preventing menopausal symptoms. This value was greatest when the patients were under forty years of age.

Bland-Sutton sums up the points to be aimed at in this connection when performing hysterectomy as follows : (1) Freedom from menopausal troubles. This is attained by conserving as much ovarian tissue as possible : (2) Maintenance of marital relations—he believes that the retention of ovarian tissue is of great importance. After bilateral oöphorectomy the sexual feelings wane after a time ; (3) In single women their nubility, i.e., their fitness for the marriage state. He is able to state from experience that after conservative hysterectomy married life is successful and happy if the necessary sterility is not accounted a matter of importance.

Ovarian Prolapse.—Victor Bonney,[3] writing on this subject, classifies the cases as follows :—

1. Simple and clinically uncomplicated ovarian prolapse. These cases are frequently not associated with symptoms ; on the other hand some present marked dyspareunia, consequent marital unhappiness, and chronic ovarian pain. It is important in these cases to exclude neurasthenia, but it is to be borne in mind that tender prolapsed appendages when examined through an abdominal incision are frequently found to be the seat of peritoneal adhesions, follicular cysts, and other abnormalities, whose presence could not be detected by vaginal examination. Further, the normal ovarian suspensory apparatus (ovarico-uterine and ovarico-pelvic ligaments) are arranged so as to relieve the neurovascular hilum from tension. This arrangement fails in conditions of prolapse.

2. Ovarian prolapse secondary to retroversion. In these cases the ovary is dragged down by the weight of the retrodeviated uterus. Similar symptoms may be present. In some of these cases restoration of the uterus to its normal position by a pessary also restores the ovary. In others, however, this is not so, and a pessary cannot be worn on account of the tender prolapsed ovaries.

3. Ovarian prolapse complicated by disease of the tube or ovary itself. These cases are more obvious, the symptoms more constant and understandable, and the indications for treatment more obvious.

He describes a new operation for the relief of these conditions (*see Figs.* 67, 68, 69). It consists in shortening the ovarico-uterine ligament by a puckering thread which, starting on the back of the uterus at the point of attachment of the ligament, runs along the free edge of the latter to its termination in the ovary. The indications for this operation, which he has successfully employed, are as follows : (1) Cases of simple ovarian prolapse in which the symptoms are undoubted, neurasthenia is excluded, and other means of relief have failed ; (2) Cases of ovarian prolapse complicated by retroversion, in which pessaries fail to relieve. Here the operation is performed concurrently with some

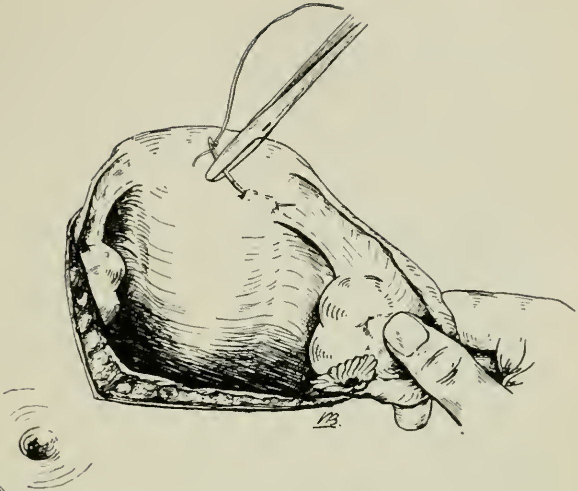


Fig. 67.—Passing the gathering stitch through the back of the uterus close to the origin of the ovarian ligament. The uterus has been lifted out of the wound.

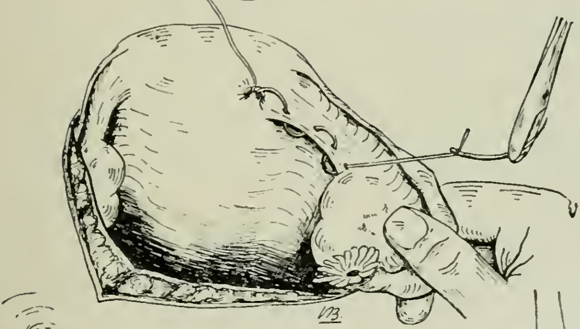


Fig. 68.—Passing the gathering stitch through the ovarian ligament.

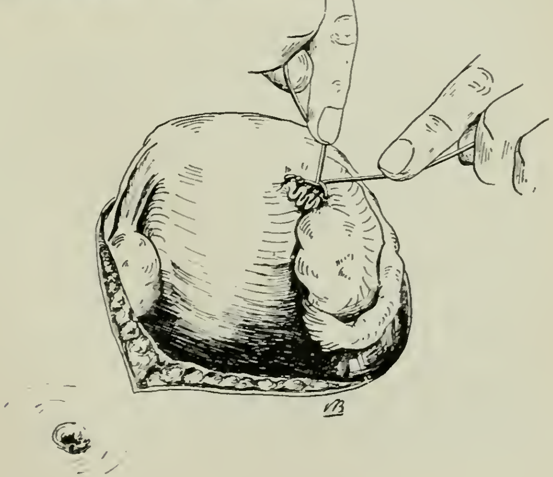


Fig. 69.—Shortening the ovarian ligament.

method of ventrosuspension; (3) Cases of ovarian prolapse complicated by disease of the appendage. The author strongly recommends conservatism in dealing with these cases. The tube alone should be removed, the ovary being conserved. After removal of the tubes for salpingitis there is a tendency for the uterus to become retroverted owing to the contraction of peritoneal adhesions. The conserved ovaries are drawn back with the uterus, a peculiarly intractable and painful form of ovarian prolapse being the result. To prevent this he makes a practice of shortening the ovarian ligaments when elongated, and completing the operation by performing ventrosuspension of the uterus. The ovaries are thus removed from the diseased peritoneal bed in which they have been lying, and stand the best chance of remaining healthy, while post-operative prolapse with its attendant dyspareunia is prevented.

REFERENCES.—[1]*Med. Press*, July 1, 1907; [2]*Brit. Med. Jour.* 1906, i. p. 121; [3]*Lancet*, Dec. 22, 1906.

OXALURIA.

(*Vol.* 1904, *p.* 545)—*Diet:* Milk, eggs, and all vegetables with a high oxalic acid content (tomatoes, rhubarb, and the like) are forbidden. Some authorities also forbid tea and coffee. Meat, fat, starchy foods, and dry vegetables are permitted. *Medicine:* Give **Magnesium Sulphate**, gr. xxx, daily.

PALPITATION.

(*Vol.* 1903, *p.* 17)—In cases where this is a functional nervous affection not due to organic heart disease, to toxic agencies (such as tobacco and tea), or to gastro-intestinal disturbances, **Cactus Grandiflora** may be given with advantage, either as the fluid extract, in 15-drop doses; or as the tincture, in 40-drop doses.

PANCREAS, SURGERY OF.

Rutherford Morison, F.R.C.S.

R. Hamilton Russell, of Melbourne,[1] reports a case of acute hæmorrhagic pancreatitis with sloughing. Lumbar drainage after abdominal section was followed by prolonged flow of chyle and ultimate recovery.

The case presented the clinical features of a severe acute pancreatitis, and the usual difficulty of distinguishing it from one of acute intestinal obstruction was encountered. The diagnosis was only suggested during operation, after the discovery of a retroperitoneal hæmatoma, from which subsequently large quantities of a juice resembling sputum, and with a beer-like odour, escaped. It was subsequently confirmed by the escape of a slough resembling pancreas, and of portions of tissue undergoing fat necrosis. Russell concludes, from the profuse creamy discharge which occurred towards the end, that the receptaculum chyli had been opened by ulceration. The case was a grave one. The patient, who was apparently moribund before the first operation, was so far restored by drainage as to tolerate further operations, and his ultimate cure necessitated three.

The result is evidence of what skilful, careful, and bold surgery can accomplish, and should serve as an encouragement to surgeons and patients in similar desperate conditions.

It is particularly noted that the face was pale. The characteristic appearance which many of these patients present has suggested to us a correct diagnosis more than once, so that it deserves to be emphasized. Cyanosis is frequently present, and so far as we know, acute pancreatitis is the only acute abdominal emergency at the commencement of which this has been observed. If a patient, usually stout, and of middle age, has a sudden abdominal attack with symptoms of intestinal obstruction, *and is cyanosed, while an indefinite tender resistance is felt over the pancreas*, a diagnosis of acute pancreatitis is justified. Slight jaundice or sugar in the urine strengthens this view. No explanation of the cyanosis has been forthcoming. It appears before marked failure of the circulation in these cases, and our view is that it must be due to the absorption of some toxin similar in effect to such drugs as antifebrin. Operation and drainage, contrary to what might have been anticipated, have been attended by remarkably good results.

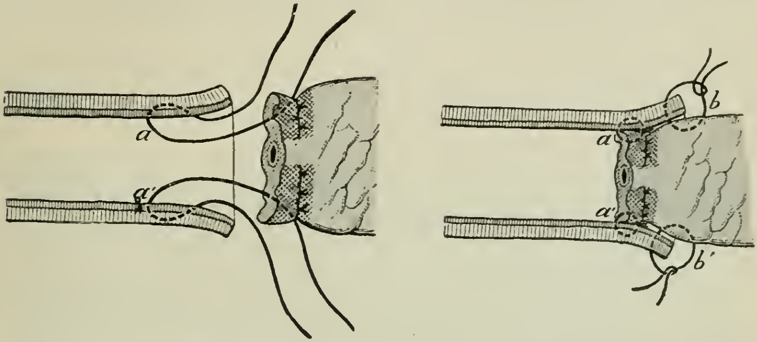


Fig. 70.—Diagram showing the method of implanting the pancreatic stump in the excluded jejunal loop (*see next page, Desjardins' operation*).

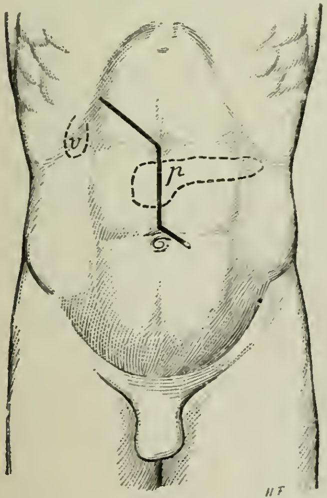


Fig. 71.—Line of Incision in the Abdominal Wall. The site of the gall-bladder is marked *v*, and that of the pancreas *p* (*Abel Desjardins*).

George Hebb Cowen [2] reports a case of subcutaneous injury of the pancreas, with operation and recovery.

A man of 38 was operated upon four days after a fall in which he hit his abdomen. Liquid blood escaped as soon as the abdomen was opened, and this was traced to a hole through the great omentum between the stomach and colon into the lesser sac, which was filled with clot and fluid blood. Quite twelve yards of gauze pressed against the pancreas were required to arrest the hæmorrhage. A sinus discharging pancreatic fluid still remained when the case was reported.

Some years ago Jordan Lloyd, in an historical paper, drew attention to the fact that pancreatic cysts depended on such injuries to the pancreas and effusion into the lesser sac. This view is now generally accepted as an explanation of one of the causes of pancreatic cysts.

H. Heineke, of Leipzig,[3] records a case of pancreatic fistula of an obstinate character which healed shortly after the institution of an antidiabetic diet.

Abel Desjardins,[4] in advocating the operation of pancreatectomy, commences by expressing surprise that the surgery of the pancreas

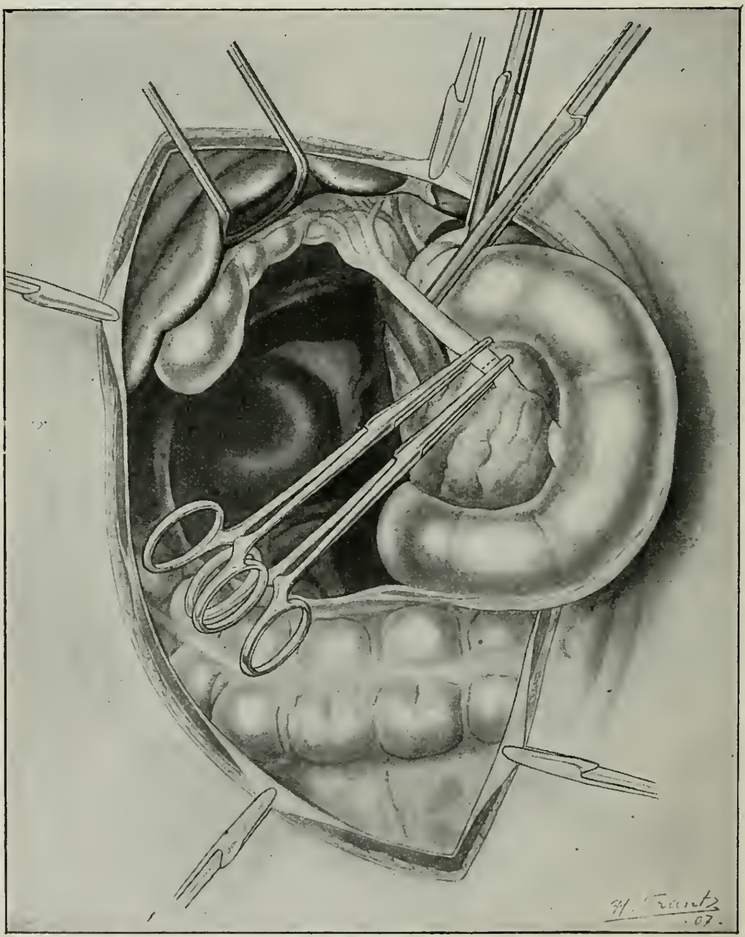


Fig. 72.—Separation of the duodenum, allowing exploration of the head of the pancreas and section of the bile-duct between the two pairs of forceps.

has made no advance in recent years. Billroth in 1894, and Franke in 1901, removed the whole pancreas, and both patients recovered from the operation. Whether long survival after complete excision is possible in man has not yet been proved, but it is certain that healthy life is possible after the greater part has been taken away. The technique of a proposed operation is given in steps. We are indebted to the *Revue de Chirurgie* for the use of the accompanying illustrations (*Figs.* 70 *to* 77), which are self-explanatory. [It is necessary to excise the duodenum.]

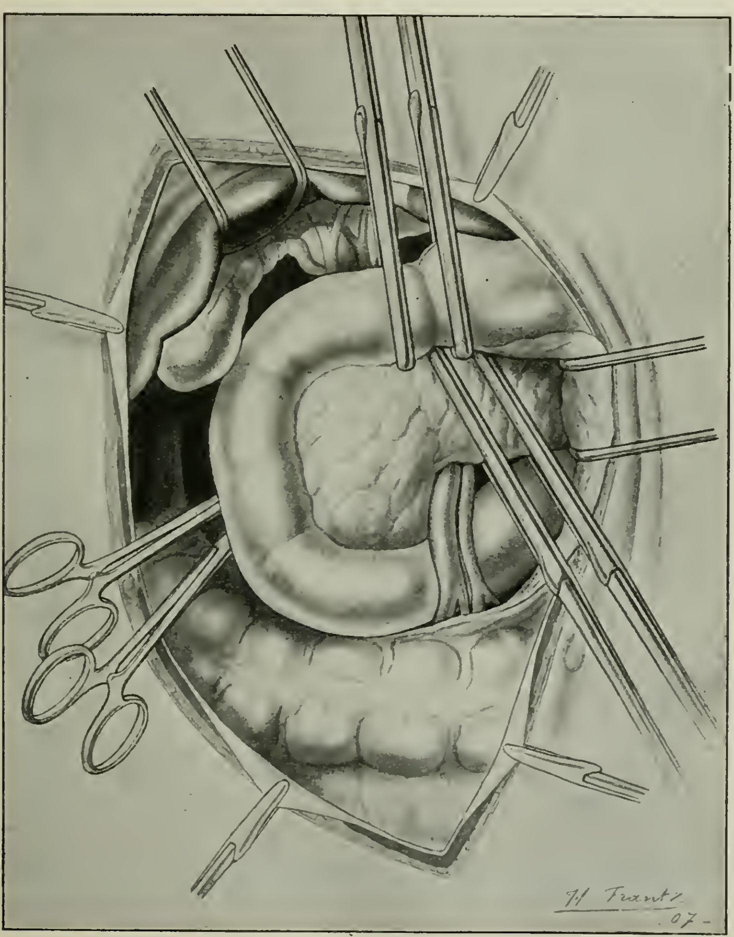


Fig. 73.—The duodenum turned down. Clamps are placed on the pylorus and on the pancreas at the points of section of these organs. Clamps have not yet been placed on the duodenum, which should previously have been drawn down to the duodeno-jejunal angle.

TECHNIQUE OF OPERATION (*see Figs.* 70–77).

1. Commence incision at the right costal margin, cross the right rectus down the middle line immediately above the umbilicus, then cross the left rectus.

2. Lift up the great omentum with colon, as in posterior gastro-enterostomy, and find the duodenum. Incise the duodenal peritoneum to the right of the descending portion and parallel with it. Strip up the duodenum, passing over the portal vein and vena cava.

3. *Duodenectomy.*—Ligature the pyloric and gastroduodenal arteries.

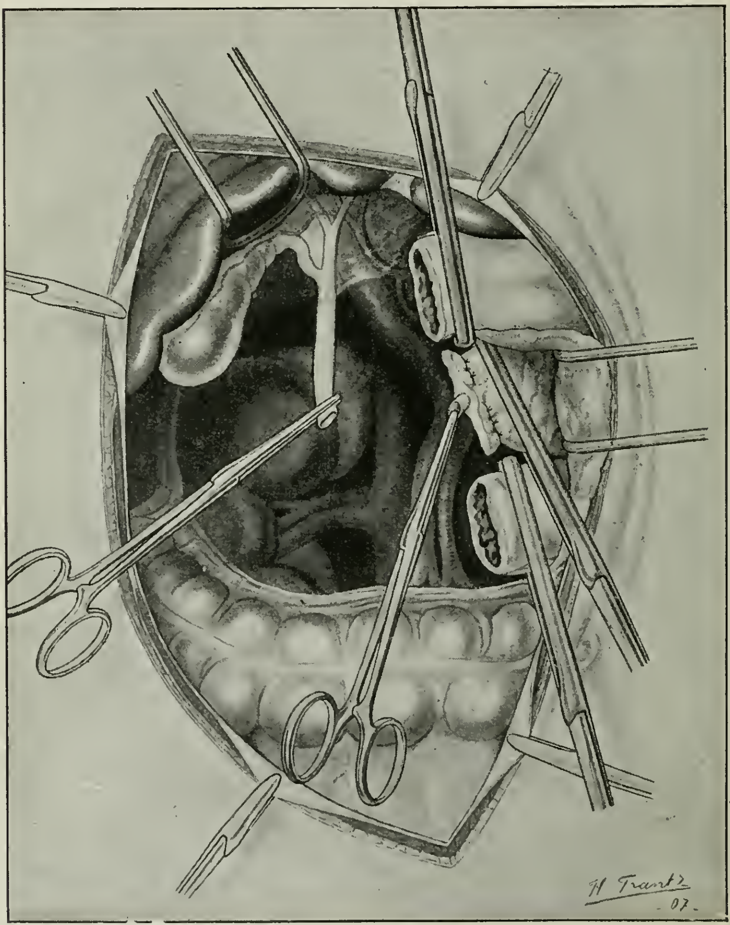


Fig. 74.—The head and neck of the pancreas, as well as the duodenum, are removed. A clamp is placed on the stomach, and another on the pancreatic stump, already sutured, a forceps on the bile-duct, and a clamp on the jejunum. The duct of Wirsung is free.

and liberate the right portion of the great omentum. Divide the pylorus between two clamps, pull down the freed duodenum, and expose the common duct as low down as possible; then divide between two clips. Continue to separate the duodenum, passing over the superior mesenteric vessels till the duodenojejunal angle is arrived at; clamp the intestine here, and divide.

4. *Pancreatectomy.*—The isolated duodenum is still held by the pancreas; clamp the body, disengage the superior mesenteric vessels, and divide it.

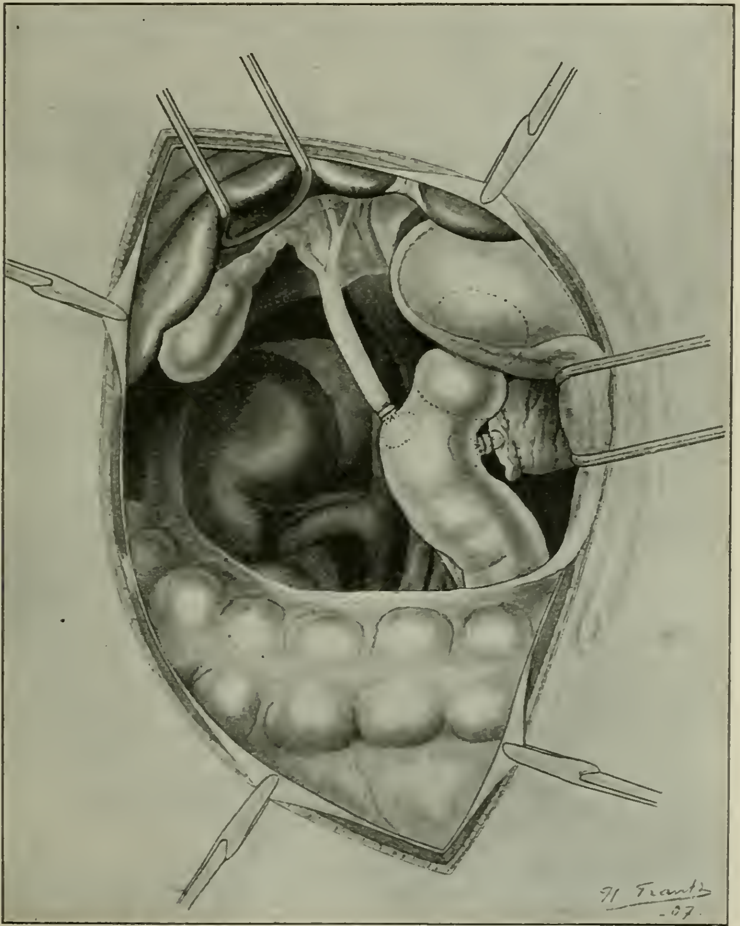


Fig 75.—Operation completed. The gastro-jejunal anastomosis is made with a Murphy button, and the anastomosis of the bile-duct and Wirsung's duct with the jejunum are done with Boari's button. It only remains to put a buried suture in the edge of the pancreas.

5. *Anastomosis.*—We have now a clamp on the pylorus, a clip on the common duct, a clamp on the jejunum, and one on the pancreas. Close the pylorus with a double row of sutures, and implant the jejunum into the stomach. Previous to jejunal implantation place into the interior of the jejunum two small buttons of Boari, to serve for the biliary and pancreatic anastomosis. Ligature the stump of the pancreas with a series of interlocking ligature chains, and isolate the duct of Wirsung. Anastomose the Wirsung and bile ducts into the

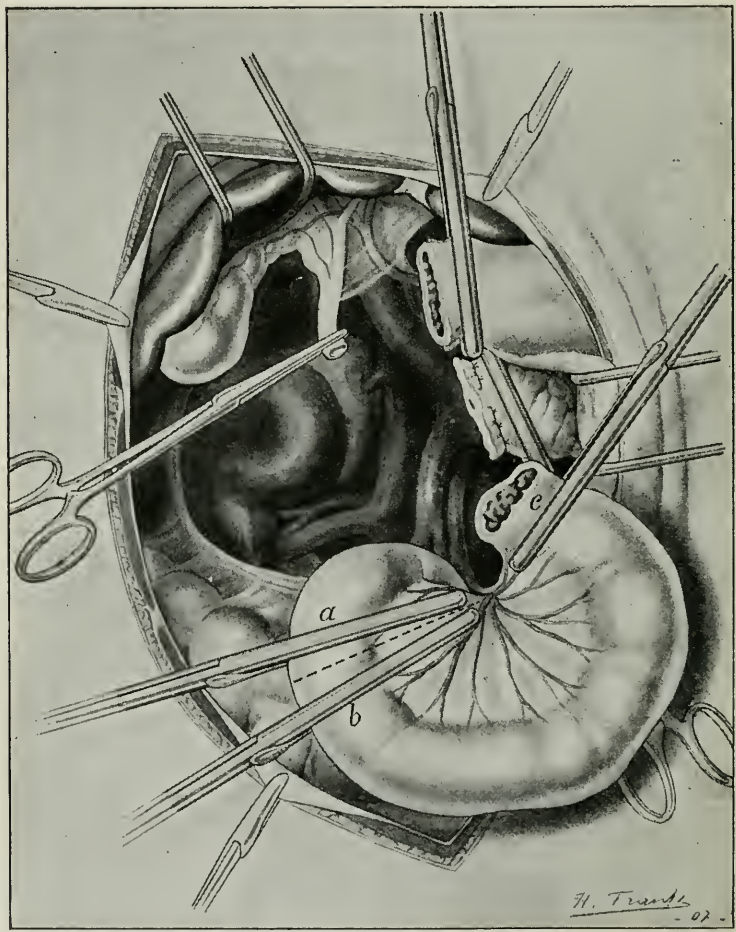


Fig. 76.—Isolation of the portion of jejunum which is to be excluded and anastomosed, on the right with the gall-bladder, on the left with the pancreas. The letters are inserted to show the final arrangement after the turning of the excluded loop shown in the next figure.

jejunum with Boari's buttons. If the duct of Wirsung and bile-duct are not dilated, the anastomosis is impossible, and then a loop of jejunum has to be isolated, into the right end of which the gall-bladder is united, and the whole pancreatic stump is invaginated into the left end. The operation is concluded by anastomosing the excluded loop of jejunum with the jejunum implanted into the stomach.

REFERENCES.—[1]*Intercol. Med. Jour.* Jan. 20, 1907; [2]*Brit. Med. Jour.* Mar. 4, 1907; [3]*Centr. f. Chir.* Mar. 9, 1907; [4]*Rev. de Chir.* June 10, 1907.

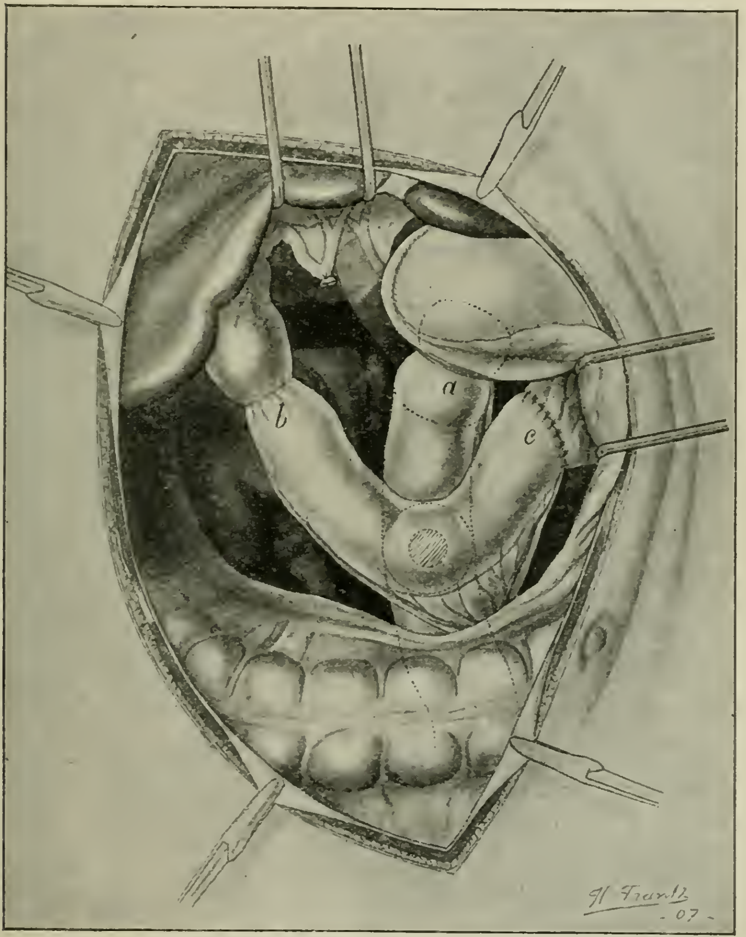


Fig. 77.—Operation completed. The stomach is closed and anastomosed by a Murphy button with the jejunum. The excluded jejunal loop is anastomosed by suture with the gall-bladder and the pancreas. The jejuno-jejunostomy is done with a button. The bile-duct has been resected as far as the cystic duct.

PANCREATITIS.

Robt. Hutchison, M.D.

Etiology.—In a review of 105 reported cases of *Acute Pancreatitis*, Egdahl[1] arrives at the following conclusions as to the etiology of this disease: (1) Gall-stones are probably the most common single cause of pancreatitis. Judging from this series, about 42 per cent of the cases of acute pancreatitis are associated with gall-stones. (2) Gastro-intestinal disorders are the next most common cause of acute pancreatitis. In this series of cases about 30 per cent belong to this group. Seventeen out of thirty-two of this group gave a history of alcoholism. It is very probable that retrojection of bile may be caused by intestinal disorders closing the papilla of Vater. (3) Acute pancreatitis may be caused by many other conditions. Among these we have typhoid fever, tuberculosis, mumps, trauma, syphilis, emboli, appendicitis, malaria, and gastric ulcer. (4) The organism most commonly present is *B. coli communis*; next comes the streptococcus and the staphylococci. (5) Typhoid fever is the most common of the acute febrile diseases present according to the previous histories of these cases of acute pancreatitis. In the present series three were directly associated with typhoid fever alone, and four had suffered from typhoid fever some time before the onset of acute pancreatitis, and had apparently recovered; another had had typhoid fever and erysipelas. But two out of these eight cases were associated with gall-stones.

Chronic Interstitial Pancreatitis also arises in many cases, as Phillips[2] points out, from catarrh of the biliary ducts originating in cholelithiasis and extending into the ducts of the pancreas. It may also occur in association with pancreatic calculi. The catarrh may be set up by other causes, one of which is said to be typhoid fever. Cases also occur without any evidence of previous catarrh of the ducts, as in some of the atrophic forms of pancreatitis with diabetes; and as Stockton remarks, "the disease is not always ascribable to infection, and is sometimes more of the nature of cirrhosis of the liver, with which it is sometimes associated." It may arise from syphilis, congenital or acquired. In some cases interstitial pancreatitis follows an attack of acute catarrhal pancreatitis. In many cases the disease is as unaccountable as is fibroid disease occurring in other organs—the liver, kidney, nervous system, etc.

Symptoms of Chronic Pancreatitis.—As in the case of cancer, symptoms are most prominent when the head of the organ is affected. They are then so similar to those of cancer of the head of the gland that they need not be repeated. When interstitial pancreatitis affects the body only of the gland, jaundice will not be present, and probably the disease may exist without possibility of recognition. But a tumour may arise in the region of the body of the pancreas, or possibly diabetes. Diabetes, however, is of pancreatic origin in the minority of cases. Fatty stools are more significant of pancreatic disease in the absence of jaundice than when jaundice is present, and with glycosuria they may be taken as indicating pancreatic disease.

Though the symptoms of the fibroid disease and of cancer of the pancreas are similar, the course of the diseases may be very different. Fibrosis, unlike cancer, may commence in an acute attack, with pyrexia and other symptoms of "catarrhal jaundice:" these symptoms soon subside, except the jaundice, which persists, with gradual fibroid change in the pancreas. In less common cases the acute symptoms clear up, but not the jaundice, the chronic fibroid change in the pancreas, nevertheless, developing. Whether commencing acutely or gradually, there is ultimately the danger, as in cancer, of biliary toxæmia, though the obstruction in the bile-duct takes longer to become complete than in cancer cases. In cancer, even if the dangers of biliary toxæmia be averted, death soon occurs. But in fibroid disease drainage of the gall-bladder may be followed by recovery with or without subsidence of the enlargement of the pancreas. This result has even followed mere manipulation of the gland, and in such cases possibly it would have occurred without operation. Operation, however, sometimes becomes compulsory when the jaundice is intense.

Pancreatitis, though it may thus be recovered from, has dangers which cancer has not. In some cases the fibroid pancreas becomes the seat of hæmorrhage or abscess formation. In other cases, especially in the intra-acinar form, a rapidly fatal form of diabetes comes on.

Diagnosis.—The diagnosis of cancerous enlargement of the head of the pancreas may be considered together with that of chronic pancreatitis. In the early stage of either condition it is quite exceptional for a tumour, definitely ascribable to the pancreas, to be detectable, and as other symptoms than jaundice are likely to be ignored by the patient, he does not usually come under observation until the onset of jaundice. The jaundice is accompanied by enlargement and distension of the gall-bladder, and by an absence, sooner or later complete, of bile from the fæces; but there is no pain or ascites. The absence of ascites is important, for it serves to exclude cancer of the liver from the diagnosis; jaundice, when associated with cancer of the liver, arises not from the cancer of the liver itself, but from enlargement of lymphatic glands in the portal fissure, or from perihepatic bands; and if these press upon the common bile-duct sufficiently to occlude it, they are sure to press also upon the thinner-walled portal vein and to produce ascites. Cancer of the liver never leads to jaundice without ascites, but the common bile-duct, unlike the portal vein, passes through the substance of the pancreas, enlargement of which may therefore readily produce jaundice without ascites.

Absence of pain and complete absence of bile from the fæces serve, as a rule, to exclude obstruction by gall-stones from the diagnosis, though in some cases of pancreatitis, bile persists in the fæces for a time after jaundice has come on. And the group of symptoms—jaundice, with a much enlarged gall-bladder and complete absence of bile from the fæces, but without pain or ascites—points strongly to pancreatic disease. One affection, however, cancer of the biliary passages, produces almost exactly the same group of symptoms, but the pain in such cases is usually more than in pancreatic disease, and when the growth is in the gall-bladder the latter is more painful and tender than the simply distended gall-bladder. When the growth is not in the gall-bladder but in the common duct, the diagnosis from pancreatic cancer is almost impossible. Steatorrhœa and azotorrhœa would perhaps favour the diagnosis of pancreatic disease. Duodenal ulcer (simple or malignant) involving the orifice of Vater, produces jaundice with colourless fæces and melæna, thus greatly resembling pancreatic disease, the only distinction between the two being the slender one of the degree of pain felt.

Supposing a diagnosis to be made of pancreatic disease, the question as to its nature becomes important, as operation which may relieve or cure pancreatitis is better avoided in malignant cases. How difficult this question is to decide is shown by the fact that even after handling the enlarged pancreas with the abdomen opened, operators have come to a wrong conclusion.

The following appear to be the main points of distinction between the two affections: (1) A history of acute onset of symptoms, with pain and pyrexia, points to non-malignancy; (2) Glycosuria does the same; (3) The more rapidly the evidence of complete obstruction develops, i.e., the more quickly the fæces becomes quite devoid of bile and the more rapidly the gall-bladder becomes distended, the more probably is the disease malignant; (4) The greater the distention and enlargement of the gall-bladder, the more likely is the disease malignant. Even in the simple disease, however, the gall-bladder may become very tense; (5) Hæmatemesis and melæna point to malignancy, though not absolutely; (6) Enlargement of the cervical glands indicates malignancy; (7) Œdema of the feet points to malignancy; (8) The more rapid the emaciation and loss of strength, the more probably is the disease malignant; too much stress, however, must not be laid upon this, as obstructive jaundice from any cause leads to rapid emaciation, and in a case of non-malignant pancreatic disease recorded by Mr. Robson, 5 st. in weight were lost in three months, while in one of the author's cases of cancer of the pancreas there was temporary gain in weight; (9) Robson remarks that enlarged glands in the neighbourhood of the pancreas are softer and more confluent in malignant than in simple disease; also that calculi in the biliary passages, and adhesions, are much more common in the non-malignant affections. These points can only be ascertained after the abdomen has been opened.

The value of the "pancreatic reaction" in the urine described by P. J. Cammidge in the diagnosis of pancreatitis is still disputed. Carstairs Douglas[3] believes that if carried out in the following way the test is of value: (1) The urine is filtered thoroughly, and if albumin or sugar be found, it is removed—the former by acidulation and boiling, the latter by full fermentation by yeast; (2) To 20 cc. of the clear filtrate is added 1 cc. of strong hydrochloric acid (specific gravity 1·16), and the mixture is boiled in a small flask on a sand-bath, a little funnel being placed in the mouth of the flask to act as a condenser. Boiling is continued for ten minutes; (3) The flask is now quickly cooled in a stream of running water, the bulk made up to 20 cc. with cold distilled water, and the excess of acid neutralized by slowly adding 4 grams of neutral lead carbonate; (4) After a few minutes the flask is cooled again, the contents filtered through a close-grained filter-paper till a perfectly clear filtrate is got; (5) This filtrate is well shaken with 4 grams of powdered tribasic lead acetate, and again filtered, an absolutely clear filtrate being obtained by repeated filtration; (6) The large amount of lead in solution is now removed, either by passing through the liquid a stream of sulphuretted hydrogen gas, or by shaking it up with 2 grams of powdered sodic sulphate, and heating the mixture to the boiling point; (7) The mixture is then thoroughly cooled in running water, filtered well, and of the clear filtrate 10 cc. are taken and made up to 18 cc. with distilled water. To this amount are added 2 grams sodic acetate, 0·8 gram phenyl-hydrazin hydrochloride, and 1 cc. of 50 per cent acetic acid; (8) This mixture is put again into a small flask fitted with a funnel condenser, and boiled on the sand-bath for ten minutes. It is filtered hot through a filter-paper moistened with hot water, into a test-tube furnished with a mark at 15 cc. If there is not enough liquid to reach this level, the deficiency is made up by adding hot distilled water; (9) In well-marked cases of pancreatic inflammation, a light-yellow flocculent precipitate should form in a few hours; but it may be necessary to leave the preparation over-night. Under the microscope the sediment is seen to consist of long, light-yellow, flexible, hair-like crystals, arranged in sheaves, which, when irrigated with 33 per cent sulphuric acid, melt away and disappear in ten to fifteen seconds after the acid first touches them.

It is best to use a portion of a twenty-four hours' sample, and fermentation changes must not have commenced. If the urine is not acid, it must first be acidified by a little hydrochloric acid.

Excess of fat in the stools, and the detection of muscle-fibres are also indications of pancreatic disease.

TREATMENT.—When due to calculi in the biliary passages, the treatment, according to Phillips (loc. cit.), is that for calculus, and the same may be said of calculi in the ducts of the pancreas. When there is no reason to suspect calculi, the treatment which has been found useful in catarrhal jaundice—whether that be due to gastro-duodenal catarrh or to pancreatic swelling—is to be followed. **Light Diet, Salines, Salicylate of Soda,** and continued administration of **Mercurials** in small doses are of benefit, and possibly mercury has as specific an action upon the pancreas as it has upon the parotid secretion. In most cases the jaundice clears up in from three to eight weeks, in some cases not for ten weeks, and cases are recorded in which even a longer time has elapsed. But when it persists so long, the danger of biliary toxæmia becomes great.

In some cases benefit may be expected from antisyphilitic treatment, and mercury may possibly have a beneficial effect even in non-syphilitic cases of fibroid pancreas. Robson advises administration of **Pankreon** or of **Liquor Pancreaticus.** The possibility of the subsidence of the disease spontaneously or under medicinal treatment should not be overlooked, and operation should only be resorted to when this appears impossible or when threatening symptoms arise. Operation has sometimes been performed too early; in one reported case the gall-bladder was drained four weeks after the onset of jaundice; two weeks later, it is stated, the bile was flowing into the intestine—a result which would possibly have occurred in the same time without operation. It would be of interest to learn what length of time after the onset of jaundice should elapse before operation: in the author's opinion this must depend upon the individual case, but it should not be less than eight weeks, and when the jaundice is not very intense it should be even longer, for it seems unlikely that danger of interstitial fibroid change will arise within that time; if, however, the distention of the gall-bladder become extreme, or symptoms of biliary toxæmia threaten, operation should not be delayed.

REFERENCES.—[1]*Johns Hop. Hosp. Bull.* April, 1907; [2]*Lancet*, Feb. 16 and 23, 1907; [3]*Glasg. Med. Jour.* May, 1907.

PARALYSIS AGITANS.

(*Vol.* 1900, *p.* 33)—Erb recommends the hypodermic injection of **Hyoscine Hydrobromide**, in doses of $\frac{1}{320}$ to $\frac{1}{160}$ gr., once or twice daily (a full dose in the morning and half a dose in the evening). Fresh preparations must be used. It may also be given in doses of $\frac{1}{200}$ to $\frac{1}{100}$ gr. in pill form. In some patients **Duboisine**, in doses of 2 to 3 decimilligrams, twice or thrice daily, acts better. (*Vol.* 1902, *p.* 440)—Williamson prescribes **Hyoscine Hydrobromide**, gr. $\frac{1}{8}$, in Chloroform Water, 6 oz.; and gives two doses a day, one after breakfast and the other at bedtime. He begins with two teaspoonfuls a dose, increasing it cautiously even to six teaspoonfuls if no toxic symptoms appear. (*Vol.* 1902, *p.* 16)—**Cacodylate of Sodium**, administered subcutaneously, is said to have effected improvement.

PARAPHIMOSIS.

(*Vol.* 1904, *p.* 554)—Vincent Hall easily reduced a paraphimosis of forty hours' duration, with a glans the size of a tennis ball, by spraying with a mixture of **Cocaine** and **Ethyl Chloride.** This induced contraction of the swollen tissues.

PARATYPHOID FEVER.

E. W. Goodall, M.D.

Castellani[1] has observed nine cases of paratyphoid fever in Ceylon. All ran a mild course and recovered, except one. This case was interesting and unusual in that in the lower part of the ileum were several ulcers, just like those of typhoid fever, and the mesenteric glands were enlarged. The ulcers, the glands, and the spleen were examined bacteriologically, and the *Bacillus paratyphosus A* was present in pure culture in the glands and spleen, and with *Bacillus coli* and other organisms in the ulcers; but the *Bacillus typhosus* was absent. Castellani also met with four cases of mixed infection: paratyphoid with malaria, with pneumococcæmia (in this case the patient had pneumococcal tonsillitis), with staphylococcæmia, and with typhoid.

Not only may the paratyphoid bacillus produce a febrile attack, of which the clinical symptoms are exactly the same as those due to the typhoid bacillus, but it may give rise to febrile attacks, clinically of a different kind. Thus Gates,[2] of Florence, reports a case in which a young woman of 21 was taken ill on Dec. 7th, 1906. with a "bilious attack," immediately followed by jaundice and symptoms of obstruction of the outflow of bile. There was slight pyrexia; but the patient was well in a little over a week. Her blood serum, in a dilution of 1–100, gave a positive reaction with *Bacillus paratyphoid B* in half an hour, but was negative to *paratyphoid A* and typhoid. What led to the examination of the blood was the fact that the patient's mother, living with her, had been ill since Nov. 19th with fever, the symptoms of which were clinically those of typhoid; but the blood serum was negative with typhoid and *paratyphoid A* bacilli, and positive to the bacillus of *paratyphoid B*. This patient also had symptoms pointing to some inflammation of the gall-bladder.

REFERENCES.—[1]*Lancet*, Feb. 2, 1907; [2]*Ibid.* June 8, 1907.

PEDICULI PUBIS.

(*Vol.* 1890, *p.* 392)—These may, it is said, be readily and safely destroyed by a single application of an **Ether Spray.**

PELVIC INFLAMMATIONS. (*See* FALLOPIAN TUBE.)

PEMPHIGUS. (*See also* DERMATITIS.)

(*Vol.* 1900, *p.* 386)—*Pemphigus Neonatorum* may be treated by **Baths** at 90° F. To each gallon of water should be added 1 oz. of **Tannic Acid.** If an antiseptic is preferred, use **Potassium Permanganate** enough to colour the water light purple. Immerse the child twice daily for five or ten minutes. Prick the large blebs before immersion, and remove pus if present with wool and boric lotion. Dry the skin, after the bath, without rubbing, and dust it with 2 parts **Airol** in 10 parts starch.

(*Vol.* 1904, *p.* 556)—Grosvenor, in speaking of the treatment of pemphigus generally, recommends **Quinine** and **Arsenic** internally, with dusting powders and baths locally. Heine successfully treated a chronic case by **Ultra-violet Rays.**

PEMPHIGUS, ACUTE (in Children). (*See* DERMATITIS EXFOLIATIVA.)

PENIS (Fibrous Induration of Corpora Cavernosa).

(*Vol.* 1902, *p.* 440; *Vol.* 1904, *p.* 559)—Underlying conditions, such as gout and diabetes, should be treated. Syphilitic cases, if seen early, get well under treatment with **Potassium Iodide.** **Electrolysis, Local Baths,** and **Mercurial Plasters,** all seem to be useful sometimes, also **Sodium Arseniate** internally.

PERITONEUM, SURGERY OF.

Rutherford Morison, F.R.C.S.

Two years ago any surgeon asked as to the mortality of general septic peritonitis would have replied that it was something between 80 and 100 per cent; at the present time the answer would be that it is no more than 10 per cent. Why is this?

1. Because of the earlier recognition by the general practitioner of conditions likely to lead to peritonitis. His diagnostic skill has advanced rapidly. He now also recognizes that *the* treatment of these conditions is surgical at the onset, and that his patient, if operated upon early, will recover. He has given up the treatment of abdominal emergencies by opium. poultices, and waiting for the development of symptoms which he knows mean impending dissolution, and submits his patient to immediate surgical treatment.

2. Surgeons now recognize that peritonitis is not a disease, but a vigorous reaction against the onslaught of organisms, and that the

result depends less upon the activity of the surgeon than on that of the peritoneum. They consequently avoid any more traumatism than is essential for dealing with the focus of the disease and for providing satisfactory drainage. They also conserve as far as possible the patient's energy during operation, by maintaining the body heat, by skilful anæsthesia, and by prompt, gentle operating. Afterwards, careful nursing, the sitting posture as an aid to drainage, and saline enemata to replace the lost body fluids and dilute the circulating toxins, are the most essential aids to recovery.

3. These essentials cannot be satisfactorily ensured by the makeshift methods which have to be tolerated in a private house, and the best work can only be accomplished in hospital cliniques, with a staff trained to deal with such emergencies.

Acute Septic Peritonitis was discussed at the 74th annual meeting of the British Medical Association. C. J. Bond[1] drew special attention to the importance of the upper or diaphragmatic area of the peritoneum in absorption. Phagocytosis is here also most active. The next area to suffer from septic infection is that part occupied by the small intestine. He insisted on the value of the integrity of the peritoneal endothelium, which is easily damaged by rough operating. It is on this, and on phagocytic defence, that the safety of the patient depends.

Treatment must inevitably wait on bacteriological knowledge, for bacteria are practically the only cause of peritonitis. Dudgeon and Sargent have shown that in nearly all cases of peritonitis which recover, the first invasion is by the *Staphylococcus pyogenes albus*, which is a stimulant to the protective mechanism. Irrigation, by removing it, may do harm.

In the worst infections (e.g., those by the *Streptococcus pyogenes*), the patient may be killed outright by the virulence of the poison. In the pneumococcic form of peritonitis, most common in female children, it is probable that the infectious agent is carried by ascending mucus currents from the vagina through the uterus and tubes. The symptoms and signs of this form are fairly distinctive, so that a clinical diagnosis is possible. A large collection of pus forms in the abdomen, often pointing at the umbilicus. Diarrhœa is frequent in the early stages. The pus is thick, greenish-yellow, odourless, and contains flakes of dirty white fibrin.

In other cases a surgeon of experience can, by careful observation, form a good idea of the character and virulence of the infection, and sometimes can guess the organism present, and so gain knowledge as to how far to go in treatment.

TREATMENT.—**Morphia** should not be used unless exceptionally. It paralyses sensation, leucocytosis, and the intestine. Purgatives are more useful as preventive than curative agents. **Calomel** is the best. The introduction of large quantities of **Normal Saline** into the vascular system favours peritoneal exudation and increased leucocytosis. The semi-sitting (Fowler) position is adopted to lower the pelvic area. Serum treatment has not yet proved very encouraging.

Operative Treatment.—"It is only in recent years that surgeons have learned that it is necessary to work in harmony with the organic processes of phagocytosis, etc., if we wish to aid instead of to hamper the peritoneum in its battle against infection."[1] As a general rule the diaphragmatic area, unless itself the seat of infection, must be left alone. The first endeavour of the surgeon should be to attack the primary focus of infection and deal with it. The general cavity with its diffused infection next requires consideration. The general rule should be, after having dealt with the primary focus and removed all local exudates by mopping or open irrigation and local drainage, to deal with collections of fluid from other areas by separate drains. In the more severe forms of infection (e.g.. *Streptococcus pyogenes* or *Bacillus pyocyaneus*), free irrigation, always avoiding the diaphragmatic area, and drainage by the pelvis and loins might be useful. In milder cases, as those due to hæmorrhage, arrest the bleeding, irrigate, leave normal saline in the abdomen, but do not drain.

In perforated gastric and duodenal ulcer, though the urgency for immediate operation is extreme, yet the virulence of the infection is not of a very high degree, and after the perforation has been dealt with and the abdomen been freely irrigated, it might be closed either without drainage or with a pelvic drain.

Cases of gonococcic, pneumococcic, and ruptured pyosalpinx infection, require the same treatment, but the pelvis should be drained. In peritonitis arising from perforation in typhoid fever, the open ulcer must be closed or shut off; and local irrigation, or cleansing and drainage are necessary.

Summary of Treatment.—The first thing is to deal with the primary focus; next with the peritoneum. Irrigate where the peritoneal cavity contains foreign material, such as blood, gastric or duodenal contents, or fæcal matter, infected bile, or urine capable of removal by flushing. It is also useful locally for the removal of purulent material at the primary focus of invasion, in which case the phagocytes are no longer living and active. It is harmful in the case of fibrinous deposit and sticky coils without fluid, and must be used with the greatest reserve, if at all, in the case of seropurulent exudates containing active phagocytes. Drainage and tamponage of all local abscesses, perforations and gangrene are essential. Drainage of the upper and middle abdominal zones, unless infected, is worse than useless. Drainage of the loin areas and pelvis, with Fowler position, is of much value. Of the three depressing factors in every abdominal operation, viz., exposure, anæsthesia, and handling—the greatest is handling.

Murphy, of Chicago,[2] in the discussion which followed, and whose results (thirty-six cases with one death) demand universal attention, said if he were asked what was the most significant or important part of this treatment, he would say: (1) Rapidly closing the intestinal opening without manipulation or traumatism to the peritoneum; (2) Relieving the pus pressure by drainage; (3) The giving of large quantities of fluid per rectum.

Mayo Robson[3] concludes that only one treatment—surgical—was worthy of consideration. He confirmed all of Murphy's suggestions.

B. G. A. Moynihan[4] attributes a large share of his success in the treatment of acute peritonitis and other serious abdominal conditions to the use of saline rectal injections by Murphy's method. He describes and figures an excellent apparatus for their administration.

James Berry[5] considers peritonitis one of the most difficult diseases in medicine and surgery to treat according to fixed rules. A form of treatment successful in one stage may be harmful or disastrous in another. His remarks are limited to acute peritonitis, and especially the varieties treated by operation.

It is not the inflammation of the peritoneum which is dangerous, but the absorption of toxins from the peritoneal cavity. The inflammation is due to bacteria, which usually originate in the alimentary tract, either by perforation or by passing through the wall. Perforation of the appendix is usually preceded by the occlusion of its cæcal end by adhesive inflammation, thereby preventing an escape of the contents of the cæcum. He has been able to demonstrate this fact very frequently. The most serious forms of peritonitis following appendicitis are not caused by rupture of the appendix, but by rupture of the abscess which has formed outside the vestigial structure. He thinks that this is what happens in fulminating appendicitis. In the great majority of cases the amount of poison which escapes is small, and not more than the peritoneum can deal with.

In the case of a large hollow viscus, the contents which escape are invariably large in amount and also very septic, and death quickly ensues unless the leak is repaired soon after the rupture. If the dose of poison is virulent, death will take place before the peritoneum has had time to show marked changes ; on the other hand, if the dose is small and the resistance is great, the peritoneum becomes intensely inflamed and a quantity of lymph is poured out.

The symptoms, say in a ruptured gastric ulcer, first show themselves by pain, local in the commencement and later general. This is followed by abdominal muscular rigidity and tenderness. Later, there is nausea and vomiting, followed by a rapid pulse and elevation of temperature, which latter indicate septic absorption. With the invasion of the peritoneal cavity there is a reflex engorgement of the blood-vessels of the affected area ; to this filling of the abdominal veins is mostly attributed the collapsed condition of the patient, hence the treatment by giving large quantities of fluid.

The rate of the pulse is very important. "Think well of a case of peritonitis in which the pulse-rate remains steadily below 100." He presumes that the abdominal distention is due to some injury to the nerves of the intestines. He cannot say if this distention is in some way protective or not. The septic matter absorbed *may* be excreted into the alimentary tract and thus be eliminated.

In a case where there is very great abdominal distention without any other important symptom, he recommends that an operation be avoided and that plenty of fluid be given instead. He mentions two cases where this was done, and where the appendix was removed at a later date.

The good done in the drainage of a septic area is due to the removal of "exhausted" serum (i.e., serum which has lost its bactericidal power), and allowing it to be replaced by normal serum, which destroys more bacteria. This explains the good results attained by draining away the ascitic fluid in a chronic tuberculous peritonitis. He only deals with *Bacillus coli communis* infection. He thinks that quantity is a much more important factor than quality.

The prognosis depends upon the nature of the perforation, and if there be a poison, on its quantity and character. It is only in a minority of the cases that there is any actual or visible perforation. It is best to defer an operation in acute appendicitis for a time, in order that nature may have a chance of localizing the poison.

He divides the treatment of peritonitis into four classes:—

1. Where there is no perforated viscus, nor any free fluid in the peritoneal cavity. Post-laparotomy sepsis is an example. Give purgatives and large quantities of fluids. Avoid opium.

2. Where there is recent perforation of a viscus, operate at once to close the perforation. The object is to prevent peritonitis rather than cure it. Free drainage is better than lavage.

3. Includes the great majority of the cases of appendicitis, with or without abscess formation. He points out that absorption from a localized abscess may be practically nil; therefore in some cases it is best to leave it until it is entirely shut off. "In a minority of cases, in my experience a small minority, provided that the case be properly treated throughout, the inflammation will continue to spread, and the patient will either die or will pass into Class 4." Do not give purgatives, large enemata, or food by the mouth. Prop up the patient in bed.

4. Where there is general septic peritonitis with general distention of the belly. He mentions that the diffusion of septic matter over the whole abdomen is rare.

These cases may be treated (1) Without operative interference: Ochsner's method; (2) By breaking down all adhesions and liberating purulent collections, with thorough irrigation of the peritoneal cavity; (3) Laparotomy and drainage, without handling any portion of the peritoneum. Berry believes that Ochsner's method is the best of the three. Patients must always be sat up in bed.

Acute Diffuse Gonorrhœal Peritonitis.—Charles Goodman[6] offers experimental and clinical evidence of the possibility of gonorrhœal peritonitis in male and female. He supports his views by an interesting case in a patient who was a school-girl 7½ years old. One week previous to admission to hospital her mother had noticed swelling about the genitals and a vaginal discharge, which had diminished on admission. The vulval discharge was found to contain gonococci; there was no other evident cause for the undoubted peritonitis. At the operation the fluid and fibrin from the peritoneum contained only gonococci—on other organism. The vaginal discharge was again examined, and found to contain gonococci. The abdomen was drained and the patient recovered.

Though the advisability of operating in cases of gonococcal peritonitis is questioned, statistics up to date are greatly in favour of operation.

The Omentum and its Functions.—A remarkable paper on the surgical functions of the omentum, written more than thirty years ago by Surgeon-General Kenneth McLeod (*Edin. Med. Jour.*, July, 1877), drew attention to the important protective influence which the omentum exercised on damaged abdominal viscera. This paper appears to have been entirely overlooked or forgotten. A paper of mine[7] showed how the omentum could and did act the part of an abdominal policeman.

"The Omentum and its Functions," by Charles Goodman,[8] is an exhaustive essay on the subject. The embryology, anatomy, and histology of the omentum are previously described, and its functions are set forth as follows :—

(1) As a protector of the intestines against chill its use is very doubtful ; (2) The numerous blood-vessels and lax tissues of the omentum allow of storage of blood when the general arterial tension is high ; (3) By venous anastomosis through adhesions, local congestion may be relieved ; (4) Through its large surface, freely exposed to surrounding parts in motion, it becomes a rapid absorber of fluids by the blood-stream ; (5) By the lymph-stream it is a free carrier of white blood corpuscles, encapsulating solid particles ; (6) Through its cohesive tendency, apertures in the abdomen, into which the omentum has been forced by intra-abdominal pressure, become more or less completely closed ; (7) Through its readiness to lymph formation and local proliferation, it becomes attached to infected parts, which are walled off, subsequently to be absorbed by phagocytic action, the peritoneal cavity being thereby protected ; (8) The majority of the phagocytes extruded into the peritoneum for its protection come through the omentum, largely from the general circulation, but in part from the tissues therein existing, subsequently to be attached to the surface of this tissue, taken into the lymph-stream, and subjected to the cytolytic influences existing there ; (9) Lack of development of the omentum, or loss through operation, renders one less resistant to peritoneal invasion ; (10) Hæmolymph-glands of the splenic type existing in its base supplement the spleen if the latter be removed or its functions interfered with.

Peritoneal Adhesions.—In abdominal diagnosis, as in diagnosis elsewhere, it is difficult to arrive at a reasonable opinion without the aid of physical signs. This is especially true when the diagnosis has to be based on the presence of pain alone. It has been proved by operation and by post-mortem experience, that the most wearing, constant, and localized abdominal pains may be present for years without any recognizable organic cause. Though it is often bad to label the doubtful cases neurotic, it is generally worse to operate on them, and no cases require greater consideration and more careful repeated examination. Though adhesions may be very serious, as for instance those causing intestinal obstruction, in the great majority of people adhesions appear to produce no symptoms. So much is certain, that the majority of "adhesion" operations fail to relieve the pains for which they were performed, even though a second operation may demonstrate that the first has been entirely successful. In addition, it must not be forgotten that operation may produce adhesions where none existed previously, that many patients think they are made worse by the operation, and that the most brilliant "cures" have followed an operation at which "nothing was done."

A. Ernest Maylard[9] records two cases in which he believes intermittent abdominal pains were produced by the dragging effects of adhesions which interfered with normal peristaltic action.

The first was an unmarried woman, aged forty-three, who during thirteen years had ten or eleven attacks of pain in the right iliac fossa, accompanied by vomiting for a few days, and followed by pain and discomfort, which would sometimes linger for weeks. There was no rise in temperature or local tenderness. Constipation was always troublesome, but worse during the seizures. Walking or moving the right leg sometimes caused the pain. There were no signs of organic disease. On operation, the appendix and pelvic organs were found healthy. The ascending colon was doubled on itself by an adhesion, and fixed behind to the psoas muscle. There was no constriction of the colon, or ulcer, or growth, and the passage seemed to be quite free. In order to make a straight passage from cæcum to hepatic flexure, a short circuiting operation between the colon above and below the band was done. The adhesion to the psoas muscle explained the pain on moving the leg, and would produce the same effect as peristaltic movements in the anchored intestine. The final result is not stated.

The second was an unmarried woman, aged fifty-four. She had suffered from constipation all her life, but more so recently. Pain was felt in the position of the descending colon, which was relieved by an evacuation. Operation showed a 4-inch band of omentum binding the transverse down to the descending colon. The bowel and the rest of the abdomen were healthy. Four years after the operation the patient continues to be well and free from her old pain.

Allen G. Ellis[10] says the control of post-operative adhesions would add greatly to the resources of the modern surgeon. He relates that the following experiments were made:—three with silver foil—two on tendons, one in the peritoneum;—one in the abdomen with a 10 per cent solution of gelatin, followed by a similar solution to which had been added 2 per cent formalin; eight with solutions of guttapercha in chloroform or carbon bisulphide, on peritoneum and tendons. All these failed to prevent adhesions. On the other hand, three experiments on tendons with thin plates of celloidin proved satisfactory.

In the peritoneum the use of this does not appear feasible. "The great desideratum of materials to be effective in preventing the formation of adhesions in the peritoneum is that they be applicable in the moist state. Solid substances of any sort yet devised must needs be anchored, and sutures defeat the purpose for which application of the protective is made. The ideal material must also be a hæmostatic, or the oozing of blood will interfere with its application. That the material should set rapidly, and remain strongly adhesive while so doing, it is hardly necessary to state. That there will be devised a material answering these requirements cannot now be predicted ; of its great desirability there can be no question."

Tuberculous Peritonitis.—Authorities are quoted [11] in favour of intraperitoneal injection of glycerin iodoform emulsion for tuberculous peritonitis. Five grams of iodoform to 100 grams of pure glycerin is the emulsion recommended in the case of adults, in children (say of 8 years) 2 grams of iodoform in 5 grams of glycerin, so that the quantity of iodoform is not reduced. If no fluid is removed before making the injection it produces no serious ill-effect. The injection provokes a rise in temperature up to 39° C. for several hours, but after four or five days this disappears. A transient albuminuria has been observed after the injection, so that on the days following the injection a strict milk diet should be ordered.

Retroperitoneal Sarcoma of Douglas's Pouch.—C. Ferrier Walters and I. Walker Hall record [12] the following case. A married woman, aged 35, had an abdominal swelling and frequent micturition. A firm nodular swelling the size of a fœtal head was felt between the uterus and rectum, which displaced the uterus upwards and forwards, so that the os could only be felt at the level of and immediately posterior to the pubic symphysis.

At operation a vascular soft growth covered by a thin filmy capsule was found. It filled the posterior half of the pelvis, being apparently attached to the cervix uteri in front and the rectum behind. Such free hæmorrhage followed an attempt to remove it that this had to be abandoned. Death occurred in 48 hours. Autopsy showed that the tumour arose in the retroperitoneal tissue on the left side of Douglas's pouch. The tumour was adherent to the posterior lip of the cervix of the uterus and to the entire length of the posterior fornix of the vagina. It then occupied the whole of the subperineal tissue and became adherent to the anterior wall of the rectum by perirectal tissue. In those parts a distinct capsule was present. It became thinner above, and at the advancing edge the tumour was only covered by peritoneum. Microscopically the tumour was composed of sarcoma cells.

Reference is made to other similar cases and the literature, but none to Anderson's paper read at a British Medical Association meeting, which was the first to point out the origin from fœtal remnants in the subperitoneal tissue of all the varieties of subperitoneal tumours, simple and malignant.

R. C. Coffey[13] remarks on the remote or indirect subperitoneal drainage in the extraperitoneal closure of persistent fæcal fistulæ. By persistent fistula he means one which either cannot or will not heal, and divides them into five varieties :—

1. A narrow fistula leading to the intestine lined by granulation tissue.

2. The intestine has a wide attachment to the abdominal wall, and the fistula is large. Increased intra-abdominal pressure forces the posterior intestinal wall through the opening, forming a definite spur. This may be reducible or become firmly fixed, owing to cohesion of the peritoneal surfaces of the mesentery of the intestine.

3. A sinus communicates with the gut, which is some distance from the belly wall. Most of them are into the pelvic colon, and their persistence is due to the contractions of the adjacent sphincter ani. This variety of fistula is the result of a pelvic abscess, or of tearing the rectum during pelvic operations.

4. Fistula leading to a large cavity resulting from gangrene due to mesenteric embolism.

5. Fistula leading to intestine above cancer.

He comments on the large mortality in cases where attempts are made to close fæcal fistulæ. He considers that the best plastic operation so far is the one described by Greig Smith, who, after dissecting out the fistula without opening the peritoneum, approximated the two ends of the intestine.

After studying the subject, he thinks that present methods are all wrong. He has reached two conclusions as to surgical principles :—

1. There seems to be an irresistible tendency on the part of the peritoneum to cling to its abdominal wall.

2. Where sepsis is encountered in doing abdominal operations, if sufficient drainage is inserted into the cavity, and discharge allowed to come out through the lower end of the wound, no matter how large the rest of the wound may be, by using layer sutures it can be closed in the presence of sepsis with as full assurance of getting primary union as if it had been perfectly aseptic.

The steps in his method of closing a fæcal fistula are :—

1. Dissect round the scar until the subperitoneal fat is reached, so that the unopened perineum hangs loosely, with the fistula standing up in its centre, like a volcano and its crater.

2. Trim off from the margin of the fistula all skin and cicatricial tissue, so that the orifice will turn in easily.

3. Turn in the edges of the fistula with linen sutures which are knotted on the inside. Add a second layer of sutures.

4. Drain this extraperitoneal area, bringing the tube out at the lower margin of the wound.

5. Suture up muscles, fascia, and skin separately.

That a drain is necessary was proved by five out of the seven cases leaking about the fifth day ; this fistula continued to leak from five days to three weeks.

By this method he has closed seven consecutive fistulæ, of from four months' to two years' standing, without a single failure.

References.—[1]*Brit. Med. Jour.* Dec. 15, 1906; [2]*Ibid.* Nov. 10, 1906; [3]*Ibid.* Dec. 29, 1906; [4]*Ibid.* Aug. 27, 1907; [5]*Lancet*, Sept. 7, 1907; [6]*Ann. Surg.* July, 1907; [7]*Brit. Med. Jour.* Jan. 13, 1906; [8]*Ann. Surg.* Nov. 1906; [9]*Brit. Med. Jour.* Mar. 2, 1907; [10]*Amer. Med.* Nov. 1906; [11]*Sem. Méd.* Dec. 19, 1906; [12]*Brit. Med. Jour.* May 14, 1907; [13]*Ann. Surg.* June, 1907.

PERTUSSIS.

Prof. G. F. Still, M.D., F.R.C.P.

An epidemic of this disease in Rome in 1906 is described by Federici,[1] who confirms the generally received view that pertussis, although prevalent at all times of the year, has a definite seasonal incidence. Out of 764 cases, no less than 414 occurred during the three months, June, July, and August, whereas in the first three months of the year only twenty-seven cases occurred. No doubt, the seasonal incidence will vary greatly in different parts of the world; in this country it is a disease chiefly of the cold months, especially in springtime.

A very marked age-incidence was also noted; 531 out of the series of cases were under the age of four years. In two cases the incubation-period could be determined with some accuracy: in one, a child aged two years, the exposure to infection was on September 4th, a cough began on September 7th, and fifteen days later there were typical paroxysms of whooping-cough; in the other, a child aged three years, with rickets, was exposed to infection on September 12th, began to cough on the night of the 14th–15th September, and showed typical paroxysms on the 25th of the month. The catarrhal period—by which apparently the author means the invasion period, when cough is present without any typical paroxysms—was found to vary from four days up to two months, and to be less in infants than in older children; in fact, he concludes that the duration of the catarrhal period varies directly as the age of the patient, and inversely as the severity of the disease. In illustration of the relation to age, he mentions a family in which the catarrhal period was, in an infant aged six months, ten days; in a child aged two-and-a-half years, eighteen days; in a child aged five years, thirty-five days. He points out, what is undoubtedly true, that the number and intensity of the paroxysms does not necessarily indicate the intensity of the disease. He describes also what has often been noticed, the curious prodromal aura which some children have just before a paroxysm commences, so that they are able to warn their parents that an attack is coming.

Complications.—These are numerous. Federici mentions as the two most frequent, hæmorrhage from the bronchi and epistaxis; hæmorrhages were also seen under the conjunctiva in four cases, and from the ear in one case. Prolapse of the rectum and hernia were noted; inflammation of the lung, empyema, and in one case albuminuria, were observed. Paralysis of the cranial nerves was noticed in three cases, and in others of the vocal cords; there was thrombosis of sinuses in one. Convulsions occurred in twelve cases, and three of these died in a convulsion.

Prognosis.—Obviously the outlook in whooping-cough is sufficiently grave to make one always guarded in prognosis. Federici's figures show a percentage of 4·1 mortality ; three out of sixteen fatal cases died in a paroxysm of coughing.

Treatment.—As Macdonald[2] says, the host of remedies advocated for pertussis is in itself proof that no single one is infallible, or even quite satisfactory. **Belladonna** is, perhaps, one of the most widely-used drugs for this disease. Young[3] says it should be given in gradually ascending doses, beginning with one drop of the tincture every four hours for a child of two years, and increasing until the physiological effects are noted. **Hydrocyanic Acid**, with or without **Bromides**, has also been recommended. Macdonald mentions **Quinine** in $\frac{1}{6}$ gr. dose for each month of age, to be given thrice daily. **Morphia** is recommended, he says, by Henoch. **Phytolacca** and **Drosera** have also been used. Macdonald himself has tried **Antipyrin**, and various combinations of this drug with bromide, or with morphia, and has come to the conclusion that the most valuable is :—

℞ Antipyrin. ʒj | Syr. Tolu. ad ℥ij
Liq. Morph. Hydrochlor. ʒss |

Of this a child of three to five years can take 1 dr. three or four times a day, and a child of one-and-a-half to three years ½ dr. If attacks are specially frequent, as they often are from bedtime to about 11 p.m., a double dose may be given at bedtime. Kraus[4] recommends **Vaporin**, which is mixed with boiling water, and used either with an inhaler, or by letting the medicated steam pass into the room. It consists of naphthalin, 180 parts ; camphor, 20 parts ; eucalyptus oil, 3 parts ; pine oil, 3 parts. It is said to diminish the attacks both in frequency and severity. Young (loc. cit.) recommends that the throat should be sprayed with **Salt Solution**, solution of **Boric Acid**, of **Sodium Bicarbonate**, or of **Hydrogen Peroxide** in glycerin and water. **Asafœtida**, he says, is useful in small doses every two hours. He points out, that in severe cases, **Whisky**, **Brandy**, or **Strychnine**, in doses appropriate to the age, may be necessary ; and that **Iron Iodide** is an excellent preparation if anæmia is associated with the pertussis.

References.—[1]*Il Policl.* Sept. 1, 1907 ; [2]*Clin. Jour.* Aug. 14, 1907 ; [3]*N. Y. Med. Jour.* in *Pediatr.* Sept. 1906, p. 583 ; [4]*Deut. med. Zeit.* 1905, in *Pediatr.* Oct. 1906, p. 649.

PHARYNX, DISEASES OF.

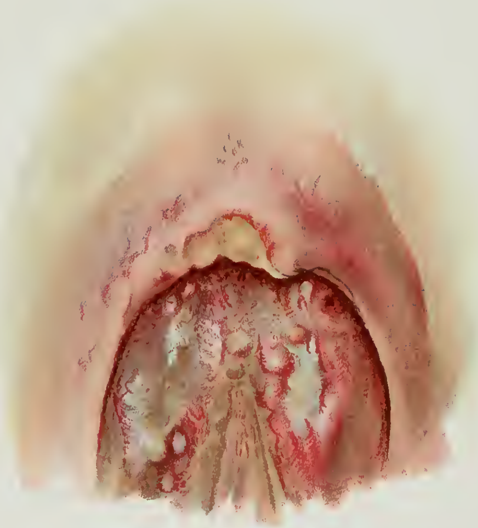
P. Watson Williams, M.D.

Hypopharyngoscopy.—Many attempts have been made from time to time to devise a method for obtaining a view of the portion of the pharynx lying below the level of the upper posterior border of the larynx, that is, the laryngopharynx. The larynx lies against the posterior wall of the pharynx here, and consequently no view is obtainable of the posterior surface of the larynx or the portion of pharynx with which it lies in contact by ordinary methods. Gerber,[1] for his method of pharyngolaryngoscopy, has devised an angular spatula, the distal end of which has a downward direction. This end is introduced behind the larynx and then drawn forward, somewhat after the method of Blumenfeld. Von Eichen[2] has still more recently devised a method by which a good view of the laryngopharynx, or as he calls it the hypopharynx, may always be got. Hald,[3] of Copenhagen, who has used the instruments, thus describes von Eichen's method :—

After careful cocainization of the fauces, the root of the tongue, and the larynx, the patient is seated on a high chair, whilst the surgeon kneels before him. This position is chosen because the patient must incline his head forward in order to release the muscles on the anterior side of the neck ; these muscles thereby become unable to contract, and so prevent the surgeon from pulling the larynx forward away from the vertebral column. But at the same time the inclined position of the head of the patient obliges the surgeon to kneel down, as it becomes necessary for him to look from below upwards at the laryngeal mirror placed in the usual way against the soft palate. Next, a strongly-built laryngeal probe of somewhat greater dimensions than ordinary is introduced through the rima glottidis down into the subglottic space, and the larynx is pulled slowly in the direction forwards and upwards, the proximal straight part of the probe resting against the upper teeth, so that the probe acts as a lever. In the laryngeal mirror it may then be observed that " the larynx is drawn 1½ to 2 cms. away from the posterior wall of the pharynx, the two pyriform recesses join into a common cavity, and in the depth the entrance of the gullet is seen closed by the constrictor pharyngis inferior. Often a facetting of the lamina of the cricoid cartilage is visible through the mucous membrane, laterally to a median prominence. Occasionally it is also observed how that part of the mucous membrane that is loosely extended over the lamina of the cricoid cartilage and its muscles becomes drawn out to a fold stretching backwards, when the larynx is lifted away from the posterior wall of the pharynx ; when the pull becomes stronger the fold disengages itself from the posterior wall of the pharynx and sinks back in a level with the rest of the mucous membrane on the lamina of the cricoid cartilage." To this description Hald adds that he has, not rarely, seen the gullet open up during vocalization, and thus has been given an opportunity of inspecting the uppermost part of that canal. It is obvious, says he, that this method is of great importance for the diagnosis of affections of the lower laryngeal part of the pharynx and of the adjoining uppermost part of the gullet ; it is not necessary to rest content after inspecting the alterations of the mucous membrane ; it is also possible to use the probe and to excise tissue for examination, or to remove foreign bodies under control of the eye. In these cases the patient himself, or an assistant, must pull the larynx forward, whilst the operator holds the laryngeal mirror with his left hand and manipulates the requisite

PLATE XXVIII.

TERTIARY SYPHILIS OF THE PHARYNX.



Indolent type, showing ulceration of the soft palate and posterior pharyngeal wall, which, in this somewhat superficial character, suggests tuberculous disease.

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instrument with the right. Hald has found it useful to draw a thin indiarubber tube over the distal part of the laryngeal lever to protect the subglottic mucosa.

Barwell[4] found the method useful, and illustrates the result. He used a stout laryngeal probe, covered with moistened cotton-wool, which (after cocainization) he passed below the vocal cords and made forward traction on the cricoid. *Fig.* 78 shows the view obtained by ordinary laryngoscopy, and *Fig.* 79 how the parts were exposed by pulling forward the larynx, bringing into view a large ulcer on the back of the arytenoid and the cricoid plate extending down on to the pharynx.

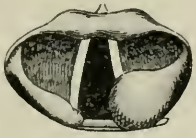

Fig. 78.

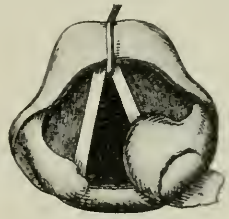

Fig. 79.

Syphilis of the Pharynx.—Irregular or atypical manifestations of syphilis sometimes give rise to diagnostic difficulties. Tertiary syphilis occasionally causes a diffuse gummatous infiltration of the posterior pharyngeal wall and soft palate, etc., as in the case shown in *Plate XXVIII.* The superficial mouse-nibbled ulceration on the slightly thickened mucous membrane resembled tuberculous disease rather than tertiary syphilis, until the soft palate became extensively ulcerated. The throat lesions very rapidly healed when the patient was treated with large doses of iodide of potassium.

REFERENCES.—[1]*Arch. f. Laryng. u. Rhinol.* Bd. xix. 1907, 33 C.; [2]*Ibid.* Bd. xix. H. 2, 1907, ss. 213, etc.; [3]*Lancet*, May 25, 1907; [4]*Ibid.* Aug. 1, 1907.

PHLEBITIS.

This most often occurs, clinically at all events, in varicose saphenous veins. It is to be treated by **Rest**, with the limb raised, for at least three weeks, to avoid displacement of loose clot. To relieve pain use **Glycerinum Belladonnæ** spread upon lint, and applied to the limb by a firm bandage from ankle to knee. This should be changed daily. Exclude milk from the diet, since its richness in calcium salts increases the formation of clot.

PHOSPHATURIA.

(*Vol.* 1899, *p.* 78; *Vol.* 1902, *p.* 69)—For cases of phosphaturia without cystitis, **Urotropin** (in 10-gr. doses thrice daily) is warmly recommended.

PILES. (*See* HÆMORRHOIDS.)

PITYRIASIS ROSEA.

E. Graham Little, M.D., F.R.C.P.

Wild[1] reports four cases of this disease which had been mistaken for syphilis and treated as such. In some of the cases confusion was introduced by the fact that the patient actually had had syphilis.

The diribution of pityriasis rosea is different in some particulars from that of syphilis—it rarely occurs on the face and scalp, and the palms and soles, which are the common positions for syphilis. The grouping of the lesions in the direction of the ribs is striking in pityriasis rosea, and does not occur in syphilis. In the older patches of pityriasis rosea a characteristic buff-coloured crinkling of the skin, "like cigarette paper," is often observed. There is less infiltration in the case of pityriasis rosea than in syphilis. The initial patch of pityriasis rosea, upon which so much stress is usually laid in its description, is quite as often absent as present, so that the help it affords in diagnosis is not great.

REFERENCE.—[1]*Med. Rec.* May 11, 1907.

PITYRIASIS RUBRA.

E. Graham Little, M.D., F.R.C.P.

Gilchrist[1] reports a case of this rare disease in a white woman aged thirty-six, admitted to the Baltimore Hospital for asthma. After three weeks in hospital she was discharged, and returned two weeks later with the generalized eruption of pityriasis rubra. There had been no previous cutaneous disease of any kind. The entire skin and the nails were affected, and most extensive desquamation and complete loss of hair took place. The general health was not appreciably impaired at first; the urine was normal. About fourteen days after the advent of the skin symptoms, there was pain in the fingers of the right hand and in the left foot, and the fingers became anæmic. Gangrene developed slowly during the succeeding five days, and necessitated the amputation of the affected fingers of the right hand, and the left foot at the ankle joint. The skin disease persisted unchanged for about seven months, and the patient then seems to have been lost sight of. No histological examination was permitted.

TREATMENT.—This was purely symptomatic—the patient was kept in bed, given easily assimilable food, and saline purgatives, while, externally, mild oily preparations, with the addition of weak carbolic acid, were applied.

REFERENCE.—[1]*Brit. Med. Jour.* Oct. 6, 1906.

PLAGUE.

J. W. W. Stephens, M.D.

W. Hunter[1] has studied the anatomy of buboes, their site, number, etc.

Date of Onset.—Buboes may be one of the earliest signs of plague. Many appear within forty-eight hours of the onset of the fever, and the majority are well marked before the fourth or fifth day of the illness.

Their Growth.—This is usually slow; a rapid increase is of grave prognosis, according to Lowson. Buboes vary in size from a hazelnut to a man's fist.

Situation.—Femoral bubo, left or right, is the commonest form: about 30 per cent for each variety. Next comes axillary bubo, from 13 to 17 per cent; then inguinal, about 2·5 to 3·5 per cent; and right to left cervical, about 2 per cent. In the case of the femoral or inguinal bubo, the swelling may extend to the iliac and lumbar regions. The skin over them is frequently covered with petechiæ. The hæmorrhagic and œdematous infiltration may extend considerably upwards or downwards. In the axilla, the glands and surrounding connective tissue form a soft œdematous mass of varying size, the œdema and hæmorrhage extending for considerable distances.

Double Buboes, e.g., femoral, occur in about ½ per cent of the cases. They point, in the author's opinion, to the conclusion that plague is *ab initio* a septicæmic disease. General lymphatic enlargement also occurs in plague, not only in the bubonic, but in other types, pointing to the view that plague exerts a special action on the general lymphatic system. The author considers that *B. pestis* multiplies in the blood stream, and primarily attacks the lymphatic system. Here, swelling, œdema, and hæmorrhagic extravasation take place, accompanied by periglandular œdema and hæmorrhage, which become diffuse. This would lead one to the conclusion that buboes are not dependent on lesions in the skin in the immediate neighbourhood, for widespread hæmorrhagic extravasations are quite as common as buboes. The author considers that the obvious objection, viz., that buboes occur in definite regions, can be met by the following considerations: (1) Many cases of plague are not bubonic, although the glands are enlarged; (2) Different types of the disease prevail in different epidemics, in one bubonic, in another the septicæmic type; (3) The epidemic may begin as bubonic and become septicæmic in character, and *vice versa*; (4) Cervical, submaxillary, and parotid buboes may occur, without obvious injury. The tonsils may apparently be a source of entry; they may be much enlarged, and contain numerous bacilli. The persistent absence of anything like acute lymphangitis is strong evidence against the skin-inoculation theory of plague. The author regards the view of cutaneous infection in plague as an exaggerated one.

THE PLAGUE COMMISSION.—The results obtained by the Plague Commission working in India in 1906 are summarized in the *British Medical Journal*, Oct. 20, 1906 (*vide* also *Lancet*, July 27, 1907).

1. *Transference from Rat to Rat by Proximity without Contact in the Presence of Fleas.*—Two cages are arranged in such a way that rats cannot come into contact with the bodies, fæces, or urine of each other, but fleas can pass freely from one to the other. Into one cage is placed a rat inoculated with plague, together with ten to twenty fleas (*P. cheopis*). As soon as the rat had died, a healthy rat was placed in the other cage. In eleven out of sixteen experiments the white rats in the second cage contracted plague, and nineteen out of fifty where the sound animals were wild Bombay rats (*vide Medical Annual*, 1907).

2. *Transference of Plague from Rat to Rat by taking Fleas from an Infected Animal and Placing them upon a Healthy one.*—In this case the rats were placed in flea-proof cages. When the inoculated rats died their fleas were caught, and transferred to the healthy rats. In eight out of thirteen experiments, the second lot of rats died when white

rats were used; and in thirteen out of twenty-five experiments when Bombay rats were used.

3. *Experimental Production of Epidemics among Guinea-pigs.*—The conclusions arrived at were the following: (*a*) Close contact of infected and non-infected animals does not give rise to an epidemic of plague in the latter if fleas are excluded; (*b*) But if fleas are present, then an epidemic starts at once, the rate of progress being proportional to the number of fleas present.

4. *Experiments in Plague Houses in Bombay.*—Animals protected from fleas by a broad layer of "tangle-foot" (a sticky substance used for catching flies), and placed in plague-infected houses, do not contract plague; but the control animals not so protected developed the disease on several occasions.

5. *Fleas Found on Rats.—Ceratophyllus fasciatus* is the flea usually found on the sewer rat (*M. decumanus*) in Great Britain and in North and Central Europe. In other parts of the world the commonest rat flea is *P. cheopis*, which was the flea used in the Bombay experiments.

6. *The Number of Plague Bacilli in the Blood, Urine, and Fæces respectively of Rats which had Died of Plague.*—The blood may have 100,000,000 bacilli per cc.; the urine may have none at all, or less than 10 per cc. Plague bacilli occurred in the urine in 29 per cent of cases. The fæces of rats dead of plague are not highly infective, and appear to play little part in the spreading of an epidemic.

7. *Chronic Plague in Rats.*—Of 1800 rats caught alive, seven were found to have chronic abscesses, which contained *B. pestis*, so that the rats were suffering from chronic plague. For the full details of these results *vide Journal of Hygiene*, vol. vi., No. 4 (extra plague number), and vol. vii., No. 3 (extra plague number).

Plague Prevention.—S. Kitasato[2] describes how plague is combated in Japan. The plague germ on entering trade ports does not directly attack man but rats, and the disease among them is well established before the first human cases occur. A winter epidemic is generally chronic in character, and a large number of rats are found infected; whereas, in the acute summer epidemics, infected rats are rarely, if ever, found.

Plague-infected vessels are forbidden all communication with the land, and procedures have at once to be taken for killing the rats aboard by a rat-destroying boat. A special organization under the control of the police is at once set at work, and isolation hospitals and laboratories are provided for each district. From the laboratory serum and vaccines are sent out for the use of the whole country. The chief regulations comprise: (1) Disinfection, discommunication, isolation; the measures are applicable not only to patients but to all suspicious cases. (2) All rats are destroyed as far as possible. (3) Isolation is enforced for ten days, as the incubation of plague is from six to seven days. (4) All buildings must be constructed so as to be rat-proof (by means of zinc walls). (5) In the laboratory 3000 to 4000 rats are examined daily, and in epidemic times enormous numbers. The submaxillary and cervical glands, and the spleen are especially examined. A variety of other examinations are made–such as gland juice, expectoration of patients, grain, cotton waste, etc. (6) Physicians attached to the police have the power of examining the dead for acute febrile diseases. It is very necessary to search out cases, as they easily escape notice otherwise. During the necessary examination (forty-eight hours) the patient, or dead body, is treated as if a case of true plague. (7) All kinds of devices are employed against rats. Sewers are rebuilt, and filth is burnt. If plague patients are found in houses, such places are surrounded with zinc walls, the sewers are furnished with metal nets, and the rats are attacked with arsenic, phosphorus, and traps. (8) The house and furniture are disinfected with carbolic, sublimate, and lime-water. Some articles are boiled or burnt. In some cases the whole building is destroyed by fire. (9) The discovery of a plague-suspected patient leads to (*a*) Removal to hospital, if it is a true case; (*b*) If it is a dead body it is disinfected, and then burnt: (*c*) The members of the family are sent to an isolation station, and all possible means of disinfection taken, including inoculation with a plague-immune serum giving passive immunity, or a vaccine in the case of those in less danger.

Rat Destruction.—Nearly five million rats were destroyed in Tokyo, but owing to the rate at which they breed no considerable decrease in the numbers of the animals could be noticed. Rats reach puberty and breed at the age of three months, and each pair gives rise as a rule to more than five young ones. Destruction lessens the struggle for existence, and the rate of multiplication doubles. Poison and traps have only a temporary effect. It is thought possible that if as many females as possible are destroyed there will result a struggle among the males for possession of the females. This method may be in the long run effective.

In Hong-kong the measures adopted for combating plague are, according to J. M. Atkinson,[3] the following:—

1. *Notification.*—This, however, is not welcomed by the Chinese, as they dread the subsequent disinfecting operations, and, consequently, prefer to "dump" the dead body into the street.

2. *Isolation.*—The hospitals are partly European, partly Chinese, under European sanitary supervision.

3. *Disinfection.*—The walls of premises are sprayed with 1–1000 perchloride, or fumigated with chlorine (one pound of chloride of lime to one quart of a 1–8 solution of sulphuric acid). Floors and furniture are scrubbed with Jeyes' fluid, and the walls are then lime-washed; chlorinated lime being added to the lime-wash in the proportion of ½ lb. to the gallon. If a case occurs in a house after the patient is removed, the detained persons have clothing provided for them, and their own clothing, bedding, curtains, etc., are removed for steam disinfection. Silk and leather goods are fumigated on the premises.

4. *Segregation of Contacts.*—The infected premises are evacuated,

and the residents kept under supervision for twelve days; they carry on their usual avocations in the meantime.

As regards the use of **Haffkine's Vaccine** as a prophylactic, T. C. Lucas [4] gives some figures relative to plague in Poona. Out of 5595 non-inoculated, the incidence was 6·8 per cent, while among 1300 inoculated it was 0·33 per cent. With regard to drug treatment, the author considers **Strychnine** to be almost specific for the disease.

N. H. Choksy [5] advocates the use of **Adrenalin** in the treatment of plague. The following formula was used:—

℞ Adrenalin Solution ♏v | Normal Salt Solution ad ℥j

Doses of 20 min. every two hours were given subcutaneously, with a maximum of 200 min. in the day. The pulse became at once steady, and was kept at a uniform level during the acute period of the disease. If this improvement was maintained, the dose of adrenalin and the frequency of administration were gradually reduced. The best results were got by combining this treatment with the **Yersin-Roux Serum.**

References.—[1]*Lancet*, July 14, 1906; [2]*N. Y. Med. Rec.* July, 1906; [3]*Brit. Med. Jour.* Dec. 15, 1906; [4]*Ibid.* April 20, 1907; [5]*Ind. Med. Gaz.* Feb. 1907.

PLEURISY.

R. W. Philip, M.D., F.R.C.P.

Harris [1] relates a case of considerable interest in which pleuritic effusion was found to contain cholesterine in large amount. Forty ounces of fluid were withdrawn from the right pleura. The fluid was of dark brown colour, with marked shimmering appearance, due to minute crystals, which gave the whole a golden spangled aspect. It was found to contain cholesterine, and it seemed likely that the commencement of the case was a hæmorrhagic exudation into the right pleural cavity as the result of severe injury.

O'Carroll [2] reports a case of hydrothorax in which the pleuræ were tapped several hundred times during three years. At the post-mortem examination there was discovered an aggregation of tuberculous glands in relation to the vena cava superior. At one point there appeared to be a fusion of the gland-mass with the wall of the vena azygos at its outlet into the vena cava. The vena azygos appeared closely adherent to the gland capsule in a crinkled, depressed scar, which the writer believes to have been the actual cause of obstruction.

Seufferheld [3] describes a case of interlobar serous pleurisy in which the diagnosis was greatly assisted by X-ray examination. The position, direction, and form of the shadow seemed to justify the diagnosis.

Forbes-Ross [4] discusses and seeks to explain, on anatomical grounds, the so-called triangle of Grocco, i.e., an area of comparative dullness of elongated triangular form along the spine on the side opposite to the effusion. The area takes this form because the paravertebral groove or sulcus outside the chest is widest and deepest below, and narrows and shallows as it ascends towards the seventh cervical spine, and the posterior mediastinum inside the chest is widest at its upper part where it joins the superior mediastinum. The sound lung is therefore able to impart its resonance more over the sound side and nearer to the vertebral column the higher one ascends; and there is less and less muscular tissue to conduct the dampening of resonance from the diseased side across the middle line. The exceptional cases where the fluid is encysted and where, consequently, Grocco's triangle is not traceable, are also discussed.

Tuffier, Jardry and Gy[5] give an interesting account of a case of chronic empyema with complete calcification of the serous lining. The layer of pleura presented a uniform consistence, resembling bone, on naked-eye observation. The authors point out that the most usual position for such calcareous deposit is about the diaphragm. The thickness of the deposit varies considerably, but it has been found not infrequently as much as 3 cc. The diagnosis, prognosis, and treatment are discussed, and a considerable bibliography is added.

Treatment.—There is little fresh to be noticed. The method of **Tapping** pleural effusion and subsequent **Injection of Air** into the pleural sac has been considered by more than one writer. Dufour[6] quotes cases illustrating the beneficial effects from such procedure. The method serves the double purpose of assisting the tuberculous lesion, and also of aiding absorption and preventing recurrence of the fluid. Vaquez[6] recommends the intra-pleural injection of **Nitrogen,** whose absorption is slower than that of oxygen. It has been observed that when atmospheric air was introduced into the pleura, at the end of several days only nitrogen and carbonic acid remained. When nitrogen is used in place of atmospheric air a much smaller quantity is necessary.

References.—[1]*Med. Chron.* Dec. 1906; [2]*Med. Press,* Jan. 30, 1907; [3]*Münch. med. Woch.* June 25, 1907; [4]*Lancet,* June 29, 1907; [5]*Rev. de Chir.* Mar. 1907; [6]*Sem. Méd.* Oct. 24, 1906.

PNEUMONIA.

R. W. Philip, M.D., F.R.C.P.

Several writers lay stress on the now generally accepted view of the specific nature and communicability of pneumonia. Azema[1] cites illustrative cases, and urges the necessity for special preventive measures, similar to those used in other infectious and contagious diseases. Michell Clarke[2] cites some of the rarer complications met with in pneumonia, including peritonitis, thrombosis, general pneumococcic infection, endocarditis, nephritis, and arthritis. He lays stress on these in support of the conception of pneumonia as a general infection. Sisto[3] draws attention to the significance of the bacteriological examination of fluid withdrawn by syringe from the affected zone. In the case of so-called asthenic pneumonia, he was able to determine the presence, not only of the ordinary diplococcus, but also of staphylococcus. He believes that the special characteristics of the asthenic variety, with its gradual onset and its protracted course, are due to the presence of such mixed infection. Litten[4] cites cases in support of the view already maintained by him that a pneumonia is sometimes dependent on accident, such as a fall, blow, crushing, etc. For such cases he prefers the name "contusional pneumonia."

The nervous complications of pneumonia are discussed by several writers. Thus, Daireaux[5] divides the forms of paralysis occurring during or after an attack of pneumonia, into first, transitory hemiplegias; second, neuritis. The first appear usually a few days after the onset of the pneumonia, but may be delayed till after the crisis. Right hemiplegia is more commonly associated with motor aphasia. Hemianæsthesia is present in about 50 per cent of the cases. The prognosis is good, the cases generally terminating quickly in cure. The second variety, namely paralysis due to localized neuritis, is rare, and occurs most commonly in the arm of the side affected by the pneumonic process. Sometimes a more general form of polyneuritis, involving both arms and legs, occurs. The clinical manifestations would suggest in some cases involvement of the large cells in the anterior cornua of the spinal cord. The character of the lesions, and the transitory nature of the manifestations in most cases, suggest that they are dependent on pneumotoxin, the action of which is gradually lessened with the continuance of the disease. The time during which the toxin is active is fortunately too short to allow of actual destruction of nerve elements.

Kephallinós[6] emphasizes the diagnostic significance of the disappearance of the patellar phenomenon in young children affected by pneumonia. His statistics show that in 50 per cent of such cases there was absence of, or at least diminution in, the knee-jerk. After convalescence the reflex returned in all the cases. Sometimes the disappearance of the reflex occurs before any symptoms of pneumonia are determinable.

Montague Murray,[7] speaking of children, expresses his disbelief in the utility of the current classification of pneumonia into lobar or croupous, and catarrhal or bronchial pneumonia, as having any value so far as prognosis or treatment are concerned. The more closely clinical phenomena are followed, the greater difficulty he finds in classification. The symptoms and signs are so variable that the cases do not lend themselves to the ordinary classification.

Graffagnini[8] discusses the varying virulence of the pneumonic sputum during the course of the illness. The virulence was determined experimentally by inoculation of white mice. It was found that inoculated animals did not die in every case, but that the blood of such animals caused death when used in subsequent inoculations. It was also found that cultures obtained during the first days of the malady were much more toxic than those obtained at later stages. He was able to trace a distinct connection between the virulence of the diplococcus and the course of the disease. Fatal cases of pneumonia commonly showed highly virulent diplococcus, death occurring in the test animals after seven to nine hours. Less urgent cases showed a corresponding diminution of virulence. Extension of the pneumonic process into fresh lung areas is preceded by increase in the virulence of the diplococcus. From the prognostic point of view he believes such physiological testing of the sputum highly serviceable.

Treatment.—There is little new to be noted. A good many writers, including Anders,[9] Murray,[10] and Rennie,[11] plead for what we should hope is now generally admitted by most clinical authorities, namely, the extreme significance of **Open-Air Treatment** of acute pneumonia. The extraordinary difference in clinical type when pneumonia is treated with free exposure to open air is one of the striking facts of medicine. The reviewer has long urged the value of the method in pneumonia and in other infective processes. If the open-air method were more regularly followed, there would be little need for the introduction of oxygen cylinders into the sick-room.

Masciangioli[12] recommends the use of a saturated solution of **Bisulphide of Carbon** in water, with a trace of peppermint. Under its action the temperature usually falls in the course of the first three or four days. The writer attributes the arrest of the disease to the powerful disinfectant properties of bisulphide of carbon. It may be recalled that the antiseptic value of bisulphide of carbon was studied by Dujardin-Beaumetz, Petrescu, and others, and that a saturated solution of the agent was recommended as far back as 1888 to take the place of sulphuretted hydrogen in Bergeon's rectal treatment of pulmonary tuberculosis.

References.—[1]*Gaz. d. Hôp.* July 6, 1907; [2]*Brist. Med.-Chir. Jour.* June, 1907; [3]*Il Policl.* Aug. 11, 1907; [4]*Verein f. inn. Med.* Berlin, Mar. 10, 1907, in *Med. Press*, Mar. 13, 1907; [5]*Arch. Gén. de Méd.* Sept. 4, 1906, in *Brit. Med. Jour.* Nov. 24, 1906; [6]*Münch. med. Woch.* July 24, 1906; [7]*Brit. Med. Jour.* June 8, 1907; [8]*Il Policl.* Sept. 1907; [9]*Med. Rec.* July 7, 1906; [10]*Loc. cit.*; [11]*Brit. Med. Jour.* Aug. 31, 1907; [12]*Rif. Med.* Sept. 15, 1906, in *Gaz. d. Hôp.* Oct. 30, 1906.

PNEUMOTHORAX, TUBERCULOUS.

(Fowler and Godlee, *Diseases of the Lungs*, *p.* 641, 1898 *Ed.*)—For the sudden painful onset give **Morphia**, gr. ¼, hypodermically. If cardiac failure threatens, inject **Ether**, ♏xx, under the skin at intervals. (**Oxygen** and **Strychnine** may also be used, or **Brandy** per rectum.) Do not aspirate the chest unless air is accumulating in the pleura and causing an increase of dyspnœa, or unless there is a large amount of fluid in the pleura as well as air. In the latter case, if simple aspiration fail, at a second attempt **Boric Acid Solution** may be run into the pleura as the effusion is being withdrawn.

POLIOMYELITIS, ANTERIOR. (*See* Spinal Paralysis, Epidemic.)

POLYCYTHÆMIA, SPLENOMEGALIC.

Robt. Hutchison, M.D.

An account of this condition—also known as myelopathic polycythæmia, Vaquez's disease, Osler's disease, erythrocytosis megalosplenica, and polycythæmia vera—was given in last year's *Annual* (p. 447). Glaessner[1] reports another case of it in a man of forty-four with tabes. The symptoms for which he sought relief were fullness in the head, headache, shortness of breath, distention of the abdomen, and swelling of the legs. For two years he had himself noticed an increasing redness of the face. He was addicted to alcohol and had had syphilis. There was most intense cyanosis of the skin and mucous membranes, and over the shoulders and buttocks numerous small purpuric spots. The skin over the chest and abdomen was covered with dilated venules. The liver and spleen were both markedly enlarged. Argyll-Robertson pupil and Romberg's sign were present. The blood-count on admission was 10,000,000 red cells, 7,000 leucocytes, and hæmoglobin 90 per cent. Morphologically, the red cells were normal, except for slight microcytosis and macrocytosis ; the leucocytes were present in the usual proportion. Death occurred slowly from cardiac dilatation. The most striking feature at autopsy was the enormous quantity of blood in all parts of the body, not distributed to groups of organs or to a single region, as is common in chronic passive congestion. In the long bones, besides the yellow marrow, there were small areas bluish red in colour, showing microscopically a great increase in the number of normoblasts, the leucocytes remaining normal in appearance and in relative proportion. The spleen was much enlarged, firm, and of a deep-red colour. Scattered through its substance were numerous small, yellowish-grey nodules, the average about 1 to 2 mm. in diameter. At first appearance these resembled tubercles, but microscopically they consisted of areas of anæmia and connective tissue overgrowth. In several of the instances of reported polycythæmia a primary tuberculosis of the spleen was found at autopsy. Glaessner considers such an infection secondary, and warns against error in diagnosis by mistaking the areas above referred to. He thinks the essential and distinctive lesion is the marrow change: the great increase in nucleated red cells. This will help to distinguish many cases of pseudo-polycythæma, which clinically may present the three cardinal symptoms—cyanosis, increased number of red cells, and enlarged spleen. Glaessner quotes a case of stasis in which the cause of obstruction during life was not apparent. The patient was very blue, and had a greatly enlarged spleen ; the red cells were 9,600,000, and the hæmoglobin 120 per cent. At autopsy an adherent pericardium and chronic pleurisy were discovered as causes of the obstructed circulation.

Parkes Weber[2] contributes a further note on a case which he has already published (*Trans. Roy. Med. and Chir. Soc.*, Vol. lxxxviii., 1905, pp. 191–223). The spleen has become larger and harder, but the polycythæmia is rather diminished, and—which is an unusual feature in such cases—there is a fair number of normoblasts present. The patient also complains of an abnormality in "hygric sensibility"—everything that she touches with her hands when they are cold feeling wet to her. With reference to the suggestion that the hæmoglobin of patients suffering from this disease cannot take up as much oxygen as that of normal individuals, and that the polycythæmia is an attempt to compensate for this disability, Weber states that in two of his cases in which the point was investigated, the oxygen capacity of the blood was found to be normal.

Saundby[3] and Anders[4] have also published additional cases of the disease, and discuss fully the various theories which have been advanced as to its etiology. Anders' paper contains a summary of eighteen cases, whilst Saundby's is provided with a very full bibliography.

REFERENCES.—[1]*Wien. klin. Woch.* 1906, p. 1475; [2]*Lancet*, Nov. 24, 1906; [3]*Brit. Med. Jour.* May 18, 1907; [4]*Amer. Jour. Med. Sci.* June, 1907.

PREGNANCY, DISORDERS OF.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Toxæmic Vomiting of Pregnancy.—Whitridge Williams[1] has repeated his observations. If the urine of a patient be collected for twenty-four hours and analysed, it will be found:—(1) That the total nitrogen output is normal; (2) That the amount of nitrogen excreted as urea is below normal; (3) That the amount of nitrogen excreted as ammonia is above normal. The ammonia co-efficient may rise from the normal 4 to 5 per cent to nearly 50 per cent. Any rise above 10 per cent is an indication for the immediate induction of abortion or premature labour. Cases of the so-called "neurotic" vomiting, even when severe, do not show this alteration in the urine. Williams believes that toxæmic vomiting and acute yellow atrophy of the liver bear a very close relation. The pathological findings in the liver are the same in either. Eclampsia, on the other hand, has a different origin. The hepatic lesions are not of the same character, and the ammonia co-efficient is practically normal.

Longridge[2] has epitomized the literature bearing on this subject. The liver is admittedly the chief or only organ capable of converting ammonia into urea. The alimentary tract is the important source of ammonia. Ammonium salts are the precursors of urea. A high ammonia co-efficient in the urine may, therefore, be due to failure on the part of the liver to synthesize the ammonium salts into urea. It has also been shown that the presence of sarcolactic and other organic acids in the blood increases the ammonia output at the expense of the urea, probably by combining with the ammonium salts before they have been acted on by the liver. Increase in the ammonia co-efficient when the total output of urinary nitrogen is low is not of importance. It occurs in normal individuals when fed on a proteid-free diet. It is of importance when the total nitrogen output is high, when it indicates a failure of the hepatic function.

All observers are not in agreement with Whitridge Williams that a "neurotic" type of vomiting exists. Nor is it possible to entirely accept a 10 per cent ammonia co-efficient as always an indication for terminating pregnancy, since Folin has shown that when the total nitrogen output is low, owing to abstention from proteid diet, the ammonia co-efficient may relatively rise to this figure. Magnus Levy has shown that post-mortem hepatic autolysis yields lactic and other acids. It is possible that such may occur in life under circumstances of extensive breakdown of the liver cells. The acids produced may be in such excess that, coupled with the small intake of nitrogenous food, and the small amount of ammonia available for their neutralization, a great diminution of the alkalinity of the blood may be produced. Thus it is possible to have cases of severe toxæmic lesions without any increase in the ammonia co-efficient. Nevertheless Longridge concludes that in the study of urinary nitrogen we have a valuable aid in the diagnosis and treatment of those diseases of pregnancy which appear to be due to toxæmia.

Eclampsia.—Hardie,[3] writing on the prophylaxis of eclampsia, lays stress on the routine examination of the urine, and on the due appreciation of the earlier symptoms of the disease, such as œdema and headache. Given a case that presents albuminuria, our object in treatment should be twofold: (1) To reduce the intake of nitrogenous food; and (2) To assist in the elimination of the toxin. A **Milk Diet** is generally agreed to be the best, but the quantity should not exceed two quarts a day. The free addition of water to the milk is valuable in that it dilutes the toxin in the blood and assists its elimination. Farinaceous foods are also indicated, since they act as "proteid sparers." Drugs play a small part in the treatment of these early cases. The citrates and acetates of **Potash** are useful. Treatment by **Thyroidin** has had many advocates, but Hardie remarks that he has seen just as good results from a milk diet alone. According to his experience albumin is present in 12 per cent of all cases of pregnancy. The rapidity with which it may appear is a point to which he rightly draws special attention. For this reason the urine should be examined every week towards the end of pregnancy. Should the albumin increase in spite of a milk diet, **Skimmed Milk** should be substituted. In the pre-eclamptic state all food should be withheld for thirty-six hours, water alone being given. This paper is an excellent one.

Evans,[4] in an interesting communication, reviews the whole subject from the point of view of treatment. He refers to the work of Edgar, who has taken a leading part in the study of the urine from these cases. Edgar himself has lately added another paper to those he has already written on the subject.[5] This observer has come to the conclusion that there are two types of eclampsia: (1) Those in which an hepatic lesion is the prominent feature—these cases have little albumin in the urine, but the proportion of ammonia and amido-acid nitrogen is high; and (2) The nephritic type, in which headache, high pulse tension, albuminuria, and casts are prominent features; but the urinary nitrogen shows little alteration from the normal in its distribution. These two classes may, however, overlap.

Evans is of opinion that pregnancy should be terminated on the appearance of symptoms or urinary changes indicating marked hepatic or renal insufficiency. In comparing the results of the old expectant treatment with those of the more modern methods of rapid delivery, it is found that the mortality figures given by the various exponents of one or the other method vary so extraordinarily as to render them of no value. Nothing, indeed, is more striking than the different results obtained by men employing the same methods. Evans is in favour of the more conservative forms of treatment. Vaginal hysterotomy and forcible dilatation by Bossi's instrument have not yet been satisfactorily proved to diminish the mortality, and the last is decidedly losing ground.

In complete anuria Edebohls' operation of decapsulation of the kidney has been tried, but the results are not encouraging. This author pleads for prophylaxis by careful supervision of the patient beforehand.

It will thus be apparent that the subject of eclampsia, looked at from any standpoint, is very far from settled. The past year, however, has witnessed the popularization of two distinct advances, one prophylactic, the other operative. These are the determination of the partition of the urinary nitrogen, and vaginal hysterotomy.

Heart Disease in Pregnancy.—Blacker,[6] in a clinical lecture on this subject, says there is no proof of any very definite physiological changes occurring either in the blood or heart during pregnancy ; but there is probably an increased demand made upon the vascular mechanisms. It is only in a small proportion of cases of valvular disease that child-bearing is a dangerous process. These are of course those in which the lesion is advanced, and compensation already on the down grade. Even when signs of failing compensation appear, complete rest and ordinary medical treatment will often cause them to disappear. He thinks that there is undoubtedly an increased tendency to abortion. More dangerous than valvular disease, because more difficult to detect, are the cardiac degenerations. Patients with fatty hearts are liable to sudden cardiac failure during pregnancy or labour. Blacker has seen several such.

TREATMENT.—He considers that the heart should first be treated on ordinary lines. This will suffice in many cases. The condition of the heart muscle should be estimated. If this is not satisfactory it will be safer to terminate the pregnancy by induction. During the labour it is important to guard against cardiac failure. Cases dying with mitral disease show distention of the right heart. If cyanosis appears, Blacker would therefore encourage post-partum hæmorrhage or would bleed the patient. A woman with cardiac disease should not be forbidden to marry, but she should be advised against having children if the lesion is at all advanced.

Prolonged Pregnancy.—McKerron[7] directs attention to cases of pregnancy in which full term is exceeded. He considers that the physiological limit of gestation is exceeded in about 2 to 3 per cent of pregnant women. Various degrees of difficult labour are the result, chiefly due to three causes : (1) Undue circumference and ossification of the fœtal head ; (2) Excessive size of the shoulders ; and (3) General enlargement of the child. Further, the abnormal distention of the maternal abdomen leads to atony of the uterus. and Bossi has suggested that the normal fatty degeneration of the uterine musculature which occurs in the puerperium may be anticipated by the still pregnant uterus. Careful examination of the size of the head in comparison with the pelvis is essential before deciding to interfere. Having determined that the case has undoubtedly gone past term, induction is indicated, especially in primigravidæ. The author for some time has made a practice of inducing labour by a gum-elastic bougie in all cases ten days over term. He quotes successful cases in support of his treatment.

For *Tubal Pregnancy*, see FALLOPIAN TUBE.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* Sept. 1906, in *Jour. Obst. and Gyn. Brit. Emp.* Nov. 1906; [2]*Jour. Obst. and Gyn. Brit. Emp.* July, 1907; [3]*Ibid.* Nov. 1906; [4]*Brit. Med. Jour.* Nov. 8, 1906; [5]*N. Y. Med. Jour.* Aug. 10, 1907; [6]*Brit. Med. Jour.* May 25, 1907; [7]*Jour. Obst. and Gyn. Brit. Emp.* May, 1907.

PRICKLY HEAT.

(*Vol.* 1901, *p.* 452)—Open-woven cotton material should be worn, and fluids taken sparingly. Apply a mixture of **Almond Oil** and **Lanolin** night and morning. **Menthol** or **Carbolic Lotions** may give temporary relief.

PROSTATE, BENIGN ENLARGEMENT OF THE.

E. Hurry Fenwick. F.R.C.S.

Too much is expected, and too much is often demanded, of the medical attendants to-day. The exacting relative or censorious friend of a well-to-do patient insists upon the doctor possessing an expert knowledge on all forms of disease, and when the treatment fails to relieve, or renders the symptoms worse, he is promptly made a scapegoat and severely blamed for want of skill or judgment. Under these altered and undeserved conditions of professional life, the modern practitioner will find, when he is called to treat a patient for symptoms arising from enlargement of the prostate gland, that he will do well to formulate an answer to at least two of these four questions: (1) How can I treat the onset symptoms most judiciously? (2) Ought I to urge a prostatectomy? (3) What may I promise for a prostatectomy? (4) What form of operation should I adopt if I am forced to intervene myself?

INDICATIONS AND CONTRA-INDICATIONS.

It must be remembered that all patients over 55 with difficulty and frequency of making water are not "prostatics": I have had cases of stricture sent me for prostatectomy which a simple internal urethrotomy was sufficient to cure. Nor is every man over 55 who habitually relieves his bladder with a catheter "a prostatic." Occasionally one comes across a "tabetic" who is living a "catheter life," and to suggest or attempt prostatectomy in a tabetic is folly; the prostate must be examined before diagnosing a "prostatic": he should be examined in the knee-elbow position, and when he is lying flat on his back—only by these two positions can one correctly estimate the healthful resiliency of the prostate gland. Now every man with slight prostatic obstruction, or even with sudden retention due to enlargement of the prostate, does not need to be hurried into a prostatectomy. The aseptic catheter, which will always hold its place in the initial treatment of the disease, is generally sufficient to give entire relief. Although years may go by with only an occasional resort to the instrument, it should be the practitioner's duty, if called to a "prostatic," to point out to him, when he is over his danger period, that he will eventually get worse, and that if any cure is to be attempted, it should be in the decade between 55 and 65, for the best operative results are obtained in these years.

TREATMENT OF ONSET SYMPTOMS.

Two classes of "prostatics" apply for treatment; and we act very differently in the two classes. To one we are called for relief of retention of urine: a full dose of urotropine in hot Hollands and water is administered, and the urine is drawn off. At all hazards the urotropine and catheter are continued as long as there is real difficulty in urination. To *intermit* catheterism at first spells danger. The silk web catheter must be tied in if the patient cannot be reached easily and regularly and a catheter nurse is not available: two days of a catheter tied in the urethra is less dangerous than a second prolonged retention of urine; but the catheter must be dropped as soon as the natural effort is sufficient to almost empty the bladder. Supposing, however, catheterism is difficult, excessively painful, or even impossible, and the bladder is distended to the umbilicus, and the distress is great, the best treatment will be by aseptic aspiration above the pubes, attempting, when the bladder is empty, to pass and tie in a full-curved coudée catheter. But if after one or two aspirations above the pubes the urethra is still impervious and the retention continues, it will be wise to make a small incision above the pubes into the bladder, and insert a thumb-sized drainage tube into the viscus, stitching the drain to the skin. Prostatectomy can be carried out a week or so later through this new track.

But retention cases are in the minority. The majority of "prostatics" come for some difficulty in urination and *frequency of the act*, day and night. These cases are not acute. There is no hurry. We therefore do not at once take up any catheter that is handy and test the residual urine; that is archaic. Nor do we sound for stone because we feel we should *do* something, or because we fear that a rival will detect a stone later, and discredit us. We know there are *three* classes or forms of prostatic enlargement, and in these three groups two are unsuitable for unnecessary urethral or vesical instrumentation. In fact, in these two groups catheterism may be more than injudicious, it may be harmful. The two *noli-me-tangere* groups are:—

1. *A Nephritic "Prostatic."*—The patient has been complaining for six to eighteen months of indigestion, thirst, nausea, loss of appetite, weakness of limb power, sleeplessness. He has had stomach medicines galore, to no purpose, but he finally begins to be worried with a little frequency of urination. Now all these symptoms point to chronic renal deterioration, associated with latent back pressure of urine, and when we learn that a little irritability of the bladder has appeared and latterly has become pronounced, we do not persist with

stomach or liver remedies, we examine the prostate. His prostate is found to be small and tough, although he is 55 to 60; his urine is limpid: 1010, no albumin, no sugar, no casts. Is the diagnosis of prostatic enlargement to be rejected on these negative grounds? By no means. It is well known that the prostate may be small per rectum and yet may have a small intravesical medianly placed projection which obstructs the urine, and it is so in this class; in fact, this type of prostate is nearly always the correlative of urinary dyspepsia due to prostatic obstruction. The patient must be treated for a few days with urotropine, and then the soft aseptic catheter can be started, a time being chosen when he can remain quiet at home. If the residual is under 4 oz., the kidney must be treated; if over, the catheter is continued and the kidney looked after. A certain small number of these cases will quickly die of suppurative renal changes, even when treated wisely like this; but the loss will be greater if they are not recognized and dealt with warily. The practitioner should always ask if there is *thirst* before laying a hand on a prostatic catheter: not thirst for alcohol, but a craving for water; constant craving for liquids in the absence of sugar or peritoneal shock generally means loss of kidney health.

2. *A Carcinomatous "Prostatic."*—In the second group the patient has been complaining of irritability of the bladder, but the stream is free enough. He is nearer 60. There is no thirst. Rectal examination shows that the left lobe of the prostate is very dense and hard just near the lower rim; the rest of it is supple. This is generally the onset of hard carcinoma of the prostate, and the hardening may be the very first indication of a disease which may take from four to five years for lethal completion. If forced to use a catheter, a soft Jaques' should be selected, and the question of prostatectomy should not be raised. It will be as well to briefly state the two clinical groups of cancer of the prostate: (1) That which is more connected with the capsule; and (2) That which originates within the substance of the gland tissue. The former is felt per rectum, as described above, as a hard patch, like a buried nut with an ill-defined border, at the very onset of the symptoms of prostatic irritation, and generally about the age of 60. The latter can rarely be detected by the bowel, but it can be found microscopically in fifteen out of every hundred cases of prostatectomy, in the substance of the gland tissue (Moynihan). The former is generally inoperable, but the latter can often be removed. Now for the third group:—

OPERATIVE JUDGMENT.

What shall I advise my patient about prostatectomy when there is a large projecting supple benign enlargement of the prostate? The best results obtained by prostatectomy have been in those patients who have used a catheter for years, and in whom the prostate is enormous. These are the easiest cases, have the least mortality, procure the greatest relief, and, as a secondary matter, give the greatest kudos.

Why ? The mortality in prostatectomy is due mainly to septic absorption. This is permitted by unsealed absorbents and veins. The prolonged use of a catheter habituates the urethra to shock, it permits a very gradual auto-intoxication, whilst it lessens, if it does not entirely abolish, the danger of absorption after the wound of prostatectomy, and therefore the chance of renal suppression. Again, the larger the prostate, the easier it is to shell out, for its connections with the capsule are loosened, and its bulk renders it infinitely more easy to manipulate than a small, wobbling prostate. Hence, the larger the prostate gland and the longer the term of catheter life, the less risk (other things being equal) from the prostatectomy. Such patients should be advised to have prostatectomy, if the catheter cannot be aseptically, easily, or wisely used.

It follows upon this that a recent case of catheterism of a virgin bladder of three or four days' duration is not so favourable. The patient is passing through a storm ; his prostate is congested ; his bodily health has suffered. Prostatectomy in such a case should not be urged ; it is wiser to wait a month or so. The axiom is then, *prostatectomy is best performed* in patients who habitually catheterize themselves, or when the bladder is virgin and has not been infected by any instrument.

To sum up, prostatectomy should never be advised in hardness of carcinoma which has so affected the capsule that it can be detected with the finger. Nor should the operation be urged on the score that benign prostates are very liable to become carcinomatous. It must not be believed that transformation of a large benign growth into a malignant growth is a common, every-day event ; it is rare (15 %, Moynihan) ; carcinoma starts in the benignly enlarged organ, it is true, but it does not appear so often in the large benign type as one is led to suppose. The operation should never be advised in patients who are suffering from renal degeneration causing thirst, sickness, anorexia ; nor is it usually judicious in the first few weeks of catheterization.

There are, however, other conditions besides the septic and renal contra-indications. Next in importance rank vascular changes. For instance, a thick-necked, red-faced, apoplectic-looking man is not a good subject, for such are prone to embolism seven to fourteen days after a successful removal. Any indication of vascular changes then should be looked for, and allowance made in the final judgment as to whether prostatectomy or catheter life is advisable.

PROGNOSIS.

What may I promise the patient as a result of expert prostatectomy ? The result in a favourable subject should give the greatest urinary relief—the catheter for daily life can be dispensed with. But immunity from the phosphatic stone habit cannot be promised ; for no matter how well a prostate is removed and the bladder base funnelled—and these are the objects of the operation—there is always some ridge or other left which is liable to catch, collect, and grow phosphatic stone—"*bladder-dirt stone.*" If such has been suffered from before the operation, it will probably recur.

Moreover, no relief to a cystitis of the coli-bacillary type can be promised; "once a coli-cystitis after 55, always a coli-cystitis," is the rule. There are quite a number of "cured" cases of prostatectomy washing out their bladders as before operation.

Again, no cure of pyelitis or pyelonephritis can be promised. Surgeons have been forced after prostatectomy to remove a diseased kidney. In some instances the diseased kidney has been distinctly aggravated by the operation, though generally the drainage of the bladder is beneficial.

Lastly, no promise can be made as to the retention of sexual power. The desire, or the seminal fluid, or the actual erectile power, may be lost, or all may remain, and even in a very small percentage be improved. It mainly depends on how the ducts are interfered with by the growth and by the operator.

The Choice of Operation.

What form of operation shall I adopt if I am forced to intervene? Ought it to be a perineal or a suprapubic prostatectomy? The form of operation adopted should vary with the form of the prostate, as estimated by *rectal* examination, always remembering that no prostate has ever proved on removal to be as large as the operator anticipated. There are three grades of prostatic sizes, and each should be dealt with differently: (1) The very small and tough prostate, equal to the flat surface of a large Spanish chestnut. An average forefinger covers this, even when it is bent at the anus at the middle joint. The intraprostatic urethral length will be about normal, 2 inches. (2) The medium-sized, equivalent to the flat surface of a mandarin orange. The long finger reaches the upper limit without effort. Intraprostatic urethral length, 3 inches. (3) The very large, the volume of a good-sized pear. The longest finger cannot top the upper edge. Intraprostatic length, over 3 inches.

1. *The Small-sized group.*—If the prostate be felt to be very small and the catheter reach the bladder directly, just as if there were no prostatic canal lengthening, the main obstruction is at the uvula vesicæ, either as a collar or a small median lobe, and division of the vesical orifice downwards and medianly by a median perineal prostatotomy, and drainage with a forefinger-sized drain tube for seven days, is sufficient to cure. Moreover, this manœuvre will give a better result than attempting to remove a small tough prostate suprapubically.

2. *The Medium-sized group.*—It is true that many American, Australian, and French operators prefer to remove such a prostate by the perineal route, and the success of this plan is startling when compared with the suprapubic route, but it is tedious and needs skilled hands, and it is best to work through the simpler route—the

suprapubic—if the practitioner is not always operating. It will often be found on examining the vesical face of a medium-sized prostate that no lobe is projecting into the bladder, and that the mucous membrane covering the circum-urethral area is tough and difficult to get through.

Under these circumstances I advise the following manœuvre. Guide a blunt-pointed bistoury into the urethral orifice, and cut the opening towards one side. Now insert the forefinger into the urethral orifice, turn it to the cut side, press laterally, and you will crush through the mucous membrane of the urethra and find yourself between the prostate capsule and its gland contents. Then enucleate very gently, as described in the Freyer method below, taking especial care and exhibiting especial gentleness at two areas: (*a*) Where the prostate blends with the deep urethra; (*b*) Along the floor of the prostatic urethra where the verumontanum is placed.

3. *The Large-sized group.*—These are the easiest. Almost invariably there is a large lobe, the lateral or that placed medianly, projecting into the bladder. Such a case is best treated by dividing the mucous membrane over the lobe. This can be done either with scissors or guarded knife, or even with the sharpened finger-nail, as suggested by Mr. Freyer, to whom the profession is indebted for distinctly improving upon MacGill's procedure, as well as for popularizing the operation by persistent advocacy. Mr. Freyer's description of his method is as follows:—

"The mucous membrane over the most prominent portion of one lateral lobe, or over the so-called 'middle' lobe, if there be but one prominence, is scored through by the sharpened finger-nail, and gradually detached by it from the prominent portion of the prostate in the bladder. Keeping the finger's point in close contact with the capsule, the enucleation of the prostate out of the enveloping sheath outside the bladder is proceeded with by insinuating the finger-tip in succession behind, outside, and in front of one lateral lobe, thus separating the capsule from the sheath. The finger is then swept in a circular fashion from without inwards, in front and to the inner side of the lobe, detaching this from the urethra, which is felt covering the catheter, and pushed forwards towards the symphysis between the lateral lobes, which will, as a rule, have separated along their anterior commissure in the course of the manipulations. The other lobe is attacked and treated in the same manner. The finger is next pushed well downwards behind the prostate, and the inferior surface of the gland is peeled off the triangular ligament. When the prostate is felt free within its sheath and separated from the urethra, with the finger in the rectum, aided by that in the bladder, it is pushed into the bladder through the opening in the mucous membrane, which, during the manipulations, will have become considerably enlarged. The prostate, which now lies free in the bladder, is withdrawn by strong forceps through the suprapubic wound. A large drain-tube is inserted and the bladder drained."

Hints for the Management of a Patient After Suprapubic Enucleation of the Prostate.

For the first twenty-four hours there is no need to change dressings. The patient lies on his back. There is always a little bleeding, the most unfavourable sign being rapid increase of bright red staining of the dressings. Dark staining denotes much urine and little oozing, and it may be disregarded. The medical man in charge should not interfere except in bright red hæmorrhage, in which case a subcutaneous dose of ergotin is often sufficient, and the foot of the bed should be raised a couple of feet.

Pain.—There is rarely any pain except the intense desire to pass water which the patient experiences on waking from the anæsthesia. Morphia $\frac{1}{4}$ gr. subcutaneously is usually sufficient to allay this. There should be no real subsequent pain in the wound (unless phosphatic crusts form), but the patient suffers more or less acutely from flatus, due to atony of the bowel, the result of shock or hæmorrhage. This is somewhat relieved by a pill given the night of the operation.

Flatus.—At the end of twelve hours a pill of 3 gr. of colocynth and hyoscyamus or any vegetable equivalent is given, to carry off the flatus, which collects very rapidly up to the end of the third day after the operation. As a rule the pill is repeated for three nights. It does not usually produce an evacuation—only the discharge of flatus. Some patients, in addition, require the flatus tube.

Actual Dressing.—The dressing is removed after twenty-four hours by taking up the edge of the layer of muslin next the skin and peeling it off, with all the overlying wet wraps ; the patient is then turned gently on to his side, and the bladder is irrigated with warm boracic lotion, by directing the force of the water on to the opening of the drainage tube, so as to displace any clots. The irrigator should be two feet above the level of the wound. The irrigation is afterwards done twice a day until the tube is removed. The nurse should remember that no distention of the bladder with water is permissible.

The wound and area around are now dried with a piece of aseptic gauze, and coated freely with lanolin and zinc ointment (equal parts) ; a piece of aseptic butter muslin, 16 in. by 12 in., is placed over the wound and lower abdomen, and two or three layers of aseptic white gauze is laid direct over the site of the tube. Over this is placed a thick layer of cellulose, and this again is covered with a single sheet of lint. The hand now holds the dressings in position while the patient is turned still further on to his side and the back is being washed. After this, the draw-sheet is changed, and the many-tail or broad linen binder is replaced. The patient may be turned from side to side, and supported in either position by a pillow at his back, after the first day.

Sloughy Wounds.—If there has been a tendency to phosphatic stone or alkaline cystitis before the operation, the cellular tissue around the incision is sure to slough a little, and the nurse must be careful, morning by morning, to remove the white necrotic pieces as soon as they are loose. Pulling away the sloughs forcibly means an oozing of blood, which is often difficult to control. If the sloughs drop back into the bladder, they will subsequently form phosphatic stone, impeding urination, inducing pain, and evoking cystitis ; hence neglect of this little point means a litholapaxy subsequently.

Position of Patient.—After the first twenty-four hours the patient may be turned gently from side to side, but he makes no voluntary movement for four days, his nurses rolling him as need be. On the completion of the third day he may have an extra pillow. He may be allowed on to the couch at the fourteenth day, being swung thither by means of the sheet.

Tube.—The tube is removed on the morning of the fourth day, or, if the patient is stout, on the sixth or seventh, and any of the more recent methods of keeping the patient dry may be tried ; but it is important that the bladder should be irrigated through a tube of some sort twice a day, and an ordinary Jacques' catheter laid in suprapubically, and fastened to the bandage, will keep the patient almost dry from the seventh to the sixteenth day.

Memoranda.—Janet's method of washing out the bladder is painful and dangerous before the tenth day ; passing a catheter per urethram before the seventh day is hazardous.

The skilful management of the bowels is of importance. It is wise to regulate them for a week before the operation.

On the evening of the third day after the operation an enema of 4 oz warm sesame oil is gently injected into the rectum, and retained if possible. After this, liquorice powder or cascara, or any vegetable aperient, may be employed to ensure an easy action, without straining, the next morning.

Prognosis after Operation.—The wetter the patient the first twenty-four hours, the better the prognosis. The unfavourable symptoms are : (1) Pain in one loin (wave of ascending inflammation along one ureter) ; (2) Dryness of dressings, showing paucity of secretion ; (3) Great thirst, after the hepatic disturbance due to the anæsthesia has declined ; (4) Pain in the calf or groin—the first indication of phlebitis, not necessarily of a septic character ; (5) Pain in testis (epididymitis) ; (6) The temperature rises a point after the first natural urination, which generally takes place on or about the fourteenth day if the suprapubic wound has been small ; a rigor after the first urination is not unusual.

PRURITUS.

E. Graham Little, M.D., F.R.C.P

Le Gendre[1] considers various general diseases which are accompanied by much itching, and which concern the general physician rather than the dermatologist. Pruritus in young children should lead to a careful investigation of a parasitic cause, such as bed-insects or thread-worms. In female children leucorrhœa may be a cause ; and in boys retained smegma præputii. In old people the cause is more usually pediculi, but he recognizes an idiopathic " prurigo senilis," which he ascribes to senile changes in the skin. In women, pregnancy is quite often attended by much itching, and is explained by an access of toxins derived from the placenta, combined with renal insufficiency. The menopause is also fruitful in neuroses, of which pruritus vulvæ may be one. Occasionally women who are too much addicted to personal cleanliness suffer from pruritus vulvæ, due to the removal by washing of fatty matters which are useful to the organs so deprived. In jaundice, in diabetes, in renal disease, in gouty persons, and in certain cases of visceral cancer, pruritus is also well marked. It is an early symptom in some general paralytics.

Treatment.—It is obvious that treatment must be very diverse. Applications of hot lotions containing **Chloral** or **Phenol** or **Coal Tar** may be used to allay the symptoms in those cases where the removal of the cause becomes impossible. The following ointment is recommended in the intervals of applying these lotions :—

R	Glycerole of Starch	20 grams	Sublimated Calomel	0·40 gram
	Bromide of Potass.		Ext. of Belladonna	0·20 gram
	Subnitr. of Bismuth	āā 1 gram		

The **Diet** of pruritic people must be very carefully regulated : wine, alcohol, tea, coffee, spices, seasoning, preserved foods, sea-fish, and crustacea must be interdicted, as well as veal, sugar, vanilla, asparagus, spinach, tomatoes, and strawberries. Individual reaction to special foods must be looked for, e.g., to eggs. As internal remedies may be cited **Valerian, Belladonna, Carbolic Acid,** the **Bromides, Pilocarpine** ; **Suprarenalin** and **Thyroid Extract** have also been found useful. **High-frequency Currents** have been used with success in some cases, as well as **Ignipuncture** and **Scarification.** Le Gendre does not mention **Lumbar Puncture,** which has been found extremely efficacious in the hands of Thibierge and Ravaut.

Reed[2] advocates pilocarpine, $\frac{1}{8}$ to $\frac{1}{4}$ gr., given by the mouth, as particularly useful in pruritus vulvæ. The sweating may be counteracted by using atropine, $\frac{1}{120}$ gr., in conjunction with the pilocarpine. Bulkeley[3] recommends the following formula for relief of itching :—

R	Phenol.	ʒss–ʒj	Glycerin.	ʒiij
	Pulv. Calamin. Prep.	ʒj	Aq. Calcis	℥j
	Zinc. Oxid.	ʒij	Aq. Rosar.	q.s. ad ℥iv

Misce. To be sopped repeatedly over the itchy surface.

Ichthyol is also very useful in 10 to 25 per cent solution in water or oil.

For mild general itching the following ointment is useful :—

R	Phenol.	gr. xx–xl	Boroglycerin.	ʒiv
	Wool Fat	℥j	Ung. Aq. Rosar.	℥iij

This is rubbed in with the palm of the hand. Its antipruritic effect will be increased by the addition of camphor and chloral, of each $\frac{1}{2}$ to 1 dr. to the ounce. In those skins which do not tolerate greasy applications, the **Glycerite of Starch** may be substituted for the greasy basis.

References.—[1]*Gaz. d. Hôp.* Nov. 3, 1906 ; [2]*Med. Rec.* May 26, 1907 ; [3]*Jour. Amer. Med. Assoc.* quoted by *N.Y. Med. Jour.* Aug. 3, 1907.

PSORIASIS.

E. Graham Little, M.D., F.R.C.P.

In last year's *Annual* (p. 470) reference was made to Nevins Hyde's suggestion that psoriasis is the reaction of the organism to the deprivation of light which civilized clothing and habits have brought about, and to his claim for its treatment by exposure to **Sunlight.** Mestcherski[1] recommends **Electric-light Baths** as one of the best methods of treating chronic psoriasis : acute attacks are not as well treated by this method, and the curative effect is to be ascribed entirely to the light rays and not to the temperature. Hyde's theory has, with this exception, not received very much support from dermatologists ; and a singular case shown by Dr. Galloway[2] at the Dermatological Society of London of a woman who, being the victim of psoriasis, had undergone treatment by exposure to sunlight, and had developed lupus erythematosus over large areas of the exposed surfaces of the body, should at least suggest that this method of treatment may have serious drawbacks.

Radcliffe Crocker[3] points to the manner of origin of psoriasis in localized restricted areas, which may precede the general eruption by weeks or months, as suggestive of microbic infection, and thinks that if these lesions are seen early enough and treated energetically, the disease may be radically cured. The distribution in first attacks is often quite irregular ; it is only when the invasion of the body is complete and repeated that the symmetry or regularity of distribution is observed, facts pointing to a systemic infection from a primary local inoculation. Crocker's statistics tend to upset the generally received view that psoriasis is commonest in early childhood. After fifty it becomes very uncommon as a first attack, and below the age of twelve months it is excessively rare ; the highest and lowest ages at which it has been hitherto recorded are eighty-five years in one case and five days in another. Crocker holds the opinion that the disease is a micro-parasitic one, and explains the apparently hereditary transmission of many cases by supposing that a special predisposition to grow this parasite is transmitted by inheritance.

TREATMENT.—**Arsenic, Thyroid Extract, Salicin,** and **Mercurial Injection** are all recommended, selection being necessary according to the experience in each individual case. Salicin, as is well known, is this author's favourite remedy ; it should be given in doses of 15 to 20 gr. or more three times a day directly after meals. Of local remedies, **Chrysarobin** and **Tar** remain the most successful. Acute cases should be treated with **Calamine** or **Lead** lotion. Bulkeley[4] still advises vegetarian diet in psoriasis, even eggs and milk being excluded. **Arsenic** he considers as the best internal medication in all but acute conditions. **X Rays** he has found exceedingly useful in some chronic states of the disease.

Danlos[5] contributes a formula for an adherent ointment, which should prove useful in this and some other chronic conditions where continued action of tarry applications is required:—

℞ Ol. Cadini ℥iss Pulv. Zinci Oxidi ℥ij
Pulv. Talci ℥ss
Misce. Fiat unguentum.

This can be removed by the use of oil or soap, but is not easily rubbed off by the clothes, and consequently does not stain these. It need be applied only every second day.

REFERENCES.—*Medicinskoje Obosrenije*, quoted by *Dub. Med. Jour.* Oct. 1906; [2]*Brit. Jour. Derm.* July, 1907, p. 243; [3]*Clin. Jour.* Mar. 6, 1907; [4]*Jour. Amer. Med. Assoc.* quoted by *Ther. Gaz.* April, 1907; [5]*Jour. de Méd.* in *Pract.* Dec. 1907.

PUERPERIUM, DISORDERS OF THE.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.
Victor Bonney, M.S., M.D., B.Sc., F.P.C.S.

Puerperal Sepsis.—Knyvett Gordon[1] has contributed an important paper on the treatment of severe cases of puerperal sepsis by active disinfection of the uterus by means of **Curettage** and the use of **Izal.** The use of the blunt curette has been deprecated by many authorities on the following grounds: (1) That it fails to reach the deeper part of the infected tissues; (2) That it tends to destroy the leucocytal barrier circumscribing the infected area; and (3) That it is liable to perforate the soft uterine wall. To these objections the author replies that a sharp curette is less dangerous than a blunt instrument, as its use requires less force, and that by its means a true eradication of the infected tissues can be effected. With regard to the alleged destruction of the leucocytal zone he asserts that it is just in these severe cases that such a barrier is not formed.

His method consists in curetting away the entire endometrium down to the muscle. The interior of the organ is then very thoroughly swabbed with undiluted "medical izal." This drug acts as a hæmostatic as well as an antiseptic. He adopted izal because of his favourable experience with it in the acute streptococcal angina of scarlet fever. The uterus is then packed with gauze soaked (1–200) or impregnated (10 per cent) with the same drug. This is removed next day.

He compares eighty-six cases treated thus with seventy-nine cases treated by general means and antiseptic intra-uterine douches. He reports a mortality of 20 per cent in the actively treated cases, as contrasted with 46 per cent in those passively treated. He is inclined to give the credit for this result more to the use of izal than to the use of the sharp curette. Izal, when used in scarlatinal angina, appears to have a selective action, having a marked effect on necrotic tissue whilst sparing the healthy mucous membrane. The only other topical application that has yielded him good results is **Perchloride of Mercury**; but in every case some signs of poisoning have been observed. He appends a table of fatal cases which is incidentally of interest as showing that removal of the infected uterus by hysterectomy does not arrest the symptoms. Of six cases so operated upon, death due to the disease followed in every case. His paper is of great interest, and it is to be hoped marks an advance in our treatment of those terrible cases of acute sepsis which are still too frequently seen after labour.

The same author[2] has contributed a paper of equal importance dealing with the treatment of puerperal peritonitis by abdominal section. He reports ten cases in which this method was carried out. The abdomen having been opened, the Fallopian tubes (which from the reports are always in a condition of suppuration) were ligatured and removed, and the pelvis was drained both through the parietal wound and by an incision into the posterior vaginal vault. Drainage tubes were used, but no attempt was made to flush out the peritoneal cavity except in one case. Of the ten cases, six recovered. The constant infecting agent was proved by cultures to be the streptococcus, associated in some cases with the gonococcus or *Bacillus coli communis*. There can be no doubt that such cases as this author reports would ordinarily be considered hopeless. That he should have succeeded in saving 60 per cent of them is a very fine result and worthy of the greatest praise. One of us (V. B.), in association with Foulerton,[3] published in 1905 an investigation into the bacteriology of puerperal infections, wherein it was shown that the streptococcus was by far the commonest infecting agent in the more severe cases of puerperal sepsis. The bacteriology of Knyvett Gordon's cases confirms the conclusions arrived at in that paper. His two communications seem to establish the following facts: (1) That curettage to be successful must be thorough; (2) That izal possesses peculiar advantages in these cases; (3) That hysterectomy is unjustifiable; (4) That the best results in puerperal infection of the pelvis are attained by removal of the infected tubes and free drainage of the pelvic peritoneum.

Admirable papers on the subject of puerperal infection have also been published by McMurtry[4] and Ellice McDonald.[5] In both of them the advantages of early surgical interference are made apparent.

The disease is, as regards its pathology, a very simple one, viz., an acute genital infection with the ordinary organisms of wound infection: streptococci, pneumococci, staphylococci, and *Bacillus coli communis*, either separately or in combination. It is the more regrettable, then, that a condition so well understood and so entirely preventable should occur so commonly. The usual fault is failure on the part of the practitioner or midwife to recognize the significance or gravity of its early symptoms. This is due to two causes: (1) The very natural inclination of practitioners to try to believe that the symptoms are due to some other cause; and (2) The equally natural hope that the symptoms, though probably due to sepsis, may prove to be only temporary. Thus the patient's illness is attributed to influenza, typhoid fever, pneumonia, or any other disease that the symptoms of the particular case may at all resemble, and much valuable time is lost.

In spite of modern research, which has proved the nature of this disease to the hilt, a large remnant of the old teaching lingers with us. There are still those amongst us to whom the occurrence of fever during the puerperium brings no sense of self-examination or self-reproach. The belief in some mysterious infecting agent beyond our ken and control is a comfortable one, and it dies hard. It is to be hoped that in the future the use of boiled indiarubber gloves in obstetric practice will become universal amongst medical men. The objections to them which are at present raised are chiefly two: that they destroy tactile sense, and that they may lead to carelessness in the matter of hand sterilization. Neither of these has weight. Tactile sense is not in the least impaired by the use of gloves by those accustomed to them. Negligence is the fault of the man, not the method, and the practitioner whose sense of asepsis is so feebly developed as to become lost because he wears gloves is not likely to conduct a labour cleanly under any circumstances. Indeed, gloves, when properly worn, *compel* antisepsis. They should be put on filled with some antiseptic solution (biniodide of mercury 1–4000 is the best). The hands are thus kept in an antiseptic solution of necessity, and that not merely for the casual "minute dip," which too often is supposed to satisfy modern antiseptic requirements, but for a length of time sufficient to destroy any organism, no matter how resistant, with which the solution comes in contact. Gloves worn this way do not hurt the hands. We have frequently worn them so for several hours without harm to the skin. Solutions stronger than 1–4000 of the perchloride or biniodide of mercury are not necessary or desirable in view of the long duration of the immersion. We see, indeed, no reason why the modern race of midwives should not be instructed in their use. It is quite certain that something beyond the cult of the antiseptic solution is required to lower puerperal morbidity and puerperal mortality, and those of us who have witnessed the remarkable improvement in surgical results that has resulted from the introduction of the indiarubber glove must feel that the desired improvement in obstetrical practice lies in that direction also.

REFERENCES.—[1]*Jour. Obst. and Gyn. Brit. Emp.* Jan. 1907; [2]*Ibid.* June, 1907; [3]*Trans. Obst. Soc.* 1905; [4]*Brit. Med. Jour.* Nov. 8, 1906; [5]*Ann. Surg.* Feb. 1907.

PURPURA.

Treat the cause (e.g., scurvy and infectious disorders). Improve the general health by good food, fresh air, and tonics, as for example: ℞ Syr. Ferri Phosph., ʒj; Calcii Hypophosph., gr. v; Syrupi, ʒj; Aq., ad ℥ss; thrice daily after food for a child of 12. For simple purpura in children, Osler uses full doses of **Arsenic** with benefit. **Calcium Chloride** may also be given thus: ℞ Calcii Chloridi, gr. xv; Syr. Aromatici, ʒj; Aq., ad ℥ss; thrice daily for three or four days at a time. For hæmorrhages from nose or gums apply **Suprarenal Extract** in water, or **Adrenalin Solution**, or 2 per cent **Gelatin Solution.**

PYELITIS. (*See* URINE.)

PYLORUS. (*See also* STOMACH, SURGERY OF.) *Robt. Hutchison, M.D.*

Neild[1] calls attention to the value of **Opium** in the treatment of cases of *Hypertrophy of the Pylorus.* This condition is met with under the following conditions:—(1) As a complication of disease near the pylorus, such as gastric or duodenal ulcer, and carcinoma; (2) As a complication of movable kidney; (3) As the result of a gastric motor neurosis; (4) As the so-called congenital hypertrophic stenosis of the pylorus in infants. It is also found in association with a gastritis, but whether the gastritis is ever the primary condition is doubtful, although there is nothing inherently improbable in such a causal relationship. There is a thickening of all the layers of the pylorus, but the most striking condition is the hypertrophy of the muscular layer, which is due to a frequently recurring over-action or spasm of the muscle. Spasm of the pylorus is a common occurrence, of local origin in acute forms of dyspepsia from various causes, especially in children, or it may result from some influence from the central nervous system, as in certain emotional states ; but, in order to produce hypertrophy, the spasm or over-action, from whatever cause, must be frequently repeated for some weeks. The association of this condition with ulcer and carcinoma is well known, and is to be regarded as a complication of these diseases, whereas the motor-neurotic form, if it may be so termed, has had less attention paid to it.

SYMPTOMS OF THE MOTOR-NEUROTIC FORM.—Pain in the epigastrium is the most constant symptom, varies greatly in intensity, is gnawing or twisting in character, increased by taking food, and relieved by vomiting. Vomiting is always present at some time, and tends to become more forcible. Vomitus consists of food or mucus ; gastric contents after a test meal may or may not contain free hydrochloric acid. Appetite remains good. Constipation is usual. May be considerable wasting. If abdomen is examined during height of pain, exaggerated gastric peristalsis may be visible ; visible peristalsis is occasionally stimulated by abdominal palpation, and produced or stopped by emotional states, such as fear. Succussion splash is usual. Signs of pyloric obstruction, such as dilatation of the stomach, are frequently seen, and may vary considerably in the same case. Enlargement and tenderness of the pylorus may often be made out, especially if examined for during visible gastric peristalsis. Sudden exacerbations or amelioration of the symptoms are very characteristic. Hæmatemesis may occur without presence of carcinoma or ulcer. Condition, if unrelieved, may last for months or even years. There is often a definite history of worry about the time of onset.

Whilst bearing in mind that carcinoma and ulcer near the pylorus may be present with hypertrophy of the pylorus, the previous history, the suddenness of the onset, and the early appearance of pain after meals, taken together, help to exclude them. Violent gastric peristalsis would be against carcinoma, as the presence of carcinoma tends to produce progressive weakness of the gastric muscle. Unfortunately the examination of the gastric contents is of little or no assistance in excluding carcinoma and ulcer, for Boas has shown, in his cases with gastritis, that hydrochloric acid may be absent, lactic acid and Boas-Oppler bacilli present. Einhorn has shown that absence of hydrochloric acid may occur as a secretory neurosis, and the secretion of mucus may also be reflexly excited, so that these may be associated with the motor disturbance in a neurotic condition apart from a gastritis.

Treatment.—The method of giving **Opium** in these cases is not unimportant. It should be given in doses of from 3 to 10 min. of the tincture in two teaspoonfuls of water twenty minutes before taking food, the dose varying according to the number of meals and the amount of dilatation. It may be necessary at first to give only liquid food. Opium acts here, as in renal colic and asthma, as an anti-spasmodic for unstriped muscle, and, if given sufficient time to act before food is taken, prevents the spasm of the pylorus. In the motor-neurotic form, food seems to press the trigger for the discharge of the spasm, whilst opium sets the muscle at half-cock.

In the form associated with gastric ulcer the pain begins some hours after food ; the trigger for the spasm in this case is actuated either by the chemical changes in the gastric contents, or by the movements of the pyloric end of the stomach irritating the ulcer. Here opium should be given some half-hour before the usual time at which pain proclaims the onset of pyloric over-action.

This drug is equally useful in the congenital form, and if given at the right time it is remarkable how small a dose is effective. One minim of tincture of opium is added to 10 oz. of water, and a teaspoonful, that is $\frac{1}{80}$ min. of the tincture, is given twenty minutes before each feed. The vomiting soon ceases, the pyloric tumour disappears, and the infant rapidly puts on weight. The author believes that operation in such cases is unjustifiable.

Reference.—[1]*Pract.* May, 1907.

PYODERMATITIS VEGETANS ("Hallopeau's Disease").

E. Graham Little, M.D., F.R.C.P.

Gaucher[1] describes a new case of this very rare affection. The characteristic features of it are the development of miliary pustules, which spread eccentrically to form plaques, and finally vegetative masses, which itch intensely. The sites usually affected are the inguinal, genito-crural, anal, pubic, umbilical, and axillary regions ; the face, and the fingers. Sometimes the scalp may be occupied by these plaques. As the patches recede and are cured, they leave pigmented stains. The mucous membranes of the mouth may also be the seat of disease. The patient whose case is here recorded was a man aged thirty-six, who had had syphilis sixteen years before the appearance of the present disease. The general health was but little impaired ; and this is the rule in these cases, and differentiates them from other forms of vegetating dermatitis, such as Neumann's pemphigus vegetans, which is usually fatal. The etiology is not very well established, but it appears to be due to a chronic pus-infection. In this case pure cultures of *Staphylococcus aureus* were obtained from the pustules.

The treatment adopted was by **Antiseptic Compresses** and **Resorcin** —pulverization of 1 per cent solution ; **Iodoform, Aristol,** or **Salicylic Acid** may be dusted on the patches. Prolonged baths are useful.

Reference.—*Gaz. d. Hôp.* Dec. 6, 1906

PYONEPHROSIS. (*See* KIDNEY, SURGERY OF.)

PYORRHŒA ALVEOLARIS. *Robt. Hutchison, M.D.*

Goadby, in the Erasmus Wilson Lecture,[1] gives the results of a careful study of this disease.

SYMPTOMS.—In the early stage the gums are red, slightly swollen, and somewhat thickened at their margins, but with no sign of pus; the whole of the teeth are frequently tender on pressure and uncomfortable in mastication, as is frequent in common coryza. This stage may spontaneously subside, or may progress to the formation of slight pockets or spaces between the fangs of the teeth and gum, the periosteum of the tooth being denuded either in the interdental spaces only, or irregularly round the whole circumference. The interdental portion of the socket is the most common position for the commencement of the disease, and in the early stages the pocket around the affected teeth is deepest in this situation. *Pari passu*, infiltration of the deeper layers of the gum and mucoperiosteum by a round-celled infiltration takes place, and the disease progressing, the alveolar margin becomes attacked also, and a condition of rarefying osteitis supervenes, which gradually replaces the upper portions of the alveolar process until the whole of the socket of the tooth is removed. Infection in the bone and the soft tissue is not regular, and is marked by exacerbations and remissions; as a rule, extremely little pain exists. During the periods of remission irregular formation of bone may take place along the alveolar margin, which may become thickened. Débris collects in the ever-increasing spaces between the tooth and the bone, but the bone infection is always deeper than the depth of the separation of the dental periosteum from the root of the tooth. Frequently masses of granulation tissue, soft and engorged with blood, form in the interdental spaces, and often develop to an extent that simulates sarcoma. The odour of the breath differs in individual cases, and may be either excessively foul, due to the presence of organisms which form indol, or may be sickly and sour, when yeasts and bacteria of active carbohydrate fermentation are responsible.

The inspection of the buccal mucous membrane, particularly in advanced cases, shows a number of small white stellate points, somewhat hard and shotty, lying underneath the mucous membrane and corresponding in position to the site of the disease of the gum margin. It is not uncommon also to find a similar line of these infected mucous glands round the mucous margin of the lips. Bacteria of various species, generally bacilli, may be obtained from them. As the disease progresses, the gums lose their hyperæmia and become pale and bloodless, due apparently to the cutting-off of the blood-supply in the infected bone, while the teeth begin to loosen, and finally drop out. Deposits of a hard nodular greenish tartar are generally to be found upon the roots adhering to the remains of the periosteum, but where the periosteum is entirely stripped it does not form. This tartar contains more organic matter than does the tartar formed above the gum margin, and is very rich in bacteria. As has already been pointed out, pain is an uncommon symptom ; consequently little or no attention is directed to the first stages of the disease, and it is not until the teeth begin to loosen, or perhaps only when one individual tooth becomes tender on mastication, that the sufferer thinks it worth while to take any notice of the matter. Very occasionally, acute local pain exists, but if pain is present it is generally referred to other places. The symptoms which are first observed by the patient are the unpleasant taste, especially in the morning, and that the gums bleed easily, a fact commonly disregarded, but invariably a sign of the disease.

Of the various general symptoms the commonest are anæmia of a secondary nature, not very marked, a blood-count of about 3,000,000 red cells, and a hæmoglobin of from 60 to 70, with a fairly marked leucocytosis ; gastro-intestinal disturbance of a toxæmic nature, frequently associated with neurasthenia, rarely pain after food, but with periodic attacks of acute pain lasting for several days, not in any way associated by the patient with the mouth condition. Pigmentation of the skin, especially of the face ; acneform eruptions on the face, back, and chest ; mild, irregular furunculosis ; chronic rheumatic pains, especially muscular, with occasional joint swelling : bullous eruptions of the skin (pemphigus) ; recurrent stomatitis, with periodic crops of small, painful ulcers. Depression, often amounting to melancholia, is by no means uncommon ; while general malaise and extreme fatigue on even slight exertion are common features. It is often remarked that a very large number of individuals are seen whose mouths are apparently affected with a marked degree of alveolar infection, but who do not show any symptoms of illness. Careful enquiry generally shows that such persons are not by any means normal, and that from time to time they present objective signs of toxæmic or other infection. They are often unable to bear continuous exertion, even of a very slight nature.

Bacteriology and Etiology.—The results of the bacteriological investigation of several cases are given in great detail (see original paper). No specific organism was discovered, but several were isolated which exhibited pathogenic properties, most of them belonging to the staphylococcal group. There is strong reason to believe that the infecting organisms are derived from a common source—milk.

On the ground of bacterial findings, the author is inclined to the view that pyorrhœa alveolaris and ulcerative stomatitis of children are the same disease, the severer form—namely, the ulcerative stomatitis of children—being in adults the more chronic condition of alveolar pyorrhœa, much as diabetes is of far graver import in children than in adults. Moreover, a recurrent form of ulceration, consisting of small aphthous patches in the mouth occurring periodically, is by no means an uncommon concomitant of chronic pyorrhœa alveolaris.

Treatment.—Local applications, **Curetting, Electrolysis,** and many other methods, have been recommended for treating the local disease, all of them being directed towards removal of local agglomerations of bacteria, calculus, and débris, and the enjoinment of constant care on the part of the patient after such treatment has often cut short the disease in the earlier, and much ameliorated it even in the later, stages, but as long as lowered resistance to the infective organisms remains, so does the disease progress. These facts, and the consideration of the bacteriology of the disease, point to the urgent want of some method by which the general as well as the local infection may be attacked.

It is impossible where any marked erosion or solution of the alveolar process has taken place to cause regeneration of the bony crypts of the teeth or a re-establishment of the periosteum upon the denuded fangs. Where a considerable amount of bone infection has occurred, but without the loss of the thin margins of the sockets, and where the peridental membrane is still intact, more may be done. In the first place it is useless to endeavour to preserve the gum and other tissues above the level of the bottom of the pocket, for if the pocket be allowed to remain it only becomes the site of fresh infection and the recommencement of the disease in tissues already weakened by the diseased process. On broad general lines the alveolar pockets should be eradicated, a process that is best performed by means of the **Electro-cautery,** only a few, at the most three, teeth being treated at a single sitting. The removal of deposits of calculus around the necks of the teeth should also be performed in the usual manner. The author has observed that thorough curetting of even two or three sockets of affected teeth is generally attended by an increase of the constitutional symptoms already present. Delayed healing, especially in the case of the wounds caused by the cautery, is common, and is frequently seen where multiple extraction is performed in cases of general pyorrhœa, and it is inadvisable to remove more than two or three of the teeth at a single sitting, or undertake extensive cauterization without previously raising the general resistance of the patient to the infecting organisms.

The method of doing this by **Yaccinating** the patient against the various organisms isolated from his gums is then described in full, but for the details of the process the original paper must be consulted. When once the patient's resistance to the infecting organisms has been raised, local treatment can be actively carried out without the fear of producing infection. The method is, as the author admits, laborious, but at the same time it furnishes a logical and practical method of dealing with an intractable disease.

REFERENCE.—[1]*Lancet*, Mar. 9, 1907.

RAYNAUD'S DISEASE.

(*Vol.* 1905, *p.* 429)—Cushing completely cured a case by applying a **Tourniquet** to the upper arm for one or two minutes daily. (*Vol.* 1901, *p.* 41)—**Nitroglycerin** has been useful in some cases.

RECTAL ALIMENTATION.

Robt. Hutchison, M.D.

Sharkey,[1] in the Bradshaw Lecture for 1906, deals exhaustively with this subject, and concludes that "While we cannot look upon rectal feeding as a satisfactory means of replacing gastro-intestinal digestion over long periods of time, we can, nevertheless, by means of it, meet those emergencies which occur in medical practice, where it is necessary for a while to give absolute rest to the upper portions of the alimentary canal."

In cases of gastric or duodenal ulcer he prefers plain water enemata, at any rate for the first seven or ten days, giving about ¾ pint every six hours.

If it be preferred to make use of nutrient enemata from the outset, or if artificial feeding has to be maintained for more than ten days, he considers grape sugar, peptone (somatose), and pulverized casein (sanatogen, plasmon, etc.), to be the best constituents. Twenty grams each of peptone and sugar, with 1 gram of salt and 200 ccm. of water, may be given every six, or, at most, every four hours, and in addition, every twenty-four hours a pint of water should be injected for cleansing purposes. Casein may take the place of the peptone, and alcohol may be added up to 10 per cent.

The advantages of such an enema are its simplicity, and the small extent to which it seems to decompose within the bowel. It should be administered by means of a funnel and long tube, the nozzle of which should be introduced well up into the bowel.

REFERENCE.—[1]*Lancet*, Nov. 10, 1906.

RECTUM, CANCER OF.

Sir Charles Ball, M.Ch., F.R.C.S.

Meinard Schmidt[1] gives some particulars of difficulties and dangers in the after-treatment of sacral excision of the rectum in Hochenegg's clinic; the number of cases of sacral excision done by Hochenegg now reaches 257. He notes amongst other interesting cases, two in which death was due to adopting the knee-elbow position, in one an abscess was burst, causing diffused septic peritonitis, and in another a patient died suddenly during operation from air entering a vein.

The treatment of rectal cancer in Rotter's clinic is described at length by Petermenn[2] on the basis of 155 cases, in 110 of which **Radical Operation** was performed, eighty-five times by the dorsal route, which is alone considered.

The diagnosis is often difficult at first, and generally not made as soon as it should be; seven of the cases probably developed from benign polyps. Contra-indication to operation is, age over seventy, or firm adhesions to neighbouring organs or to the sacrum. If only parts of the bladder, vagina, prostate, etc., are involved, they may be removed with the rectum, and slight involvement of these organs is not a contra-indication.

Preliminary colostomy is only performed when stenosis is extreme. Long preparation of the bowel is unnecessary. Three days before operation large doses of castor oil are given, and only light food is allowed. On the day before the operation water enemas are used, and liquid diet only is given. The bowel is quieted by opium the evening before and morning of the operation. The bowel was always found empty. In cases destined for circular suture longer preparatory treatment must be given.

In the last three years the dorsal route, with left-sided incision and resection of the coccyx, has been used. This gives ample room, and in one case 26 in. of bowel was resected in this way. If the tumour begins 1½ in. above the sphincter, this is preserved, it being possible in forty-five cases out of eighty-five.

As anæsthetic, morphine-scopolamine with ether is used. Lumbar anæsthesia was not satisfactory. The patient lies on the right side, the right leg extended, the left flexed. The anus is sewed up. The incision passes from the left postero-superior spine to the tip of the coccyx, and severs the transverse head of the gluteus maximus and the sacro-sciatic ligaments. The coccyx is then exposed and severed from the sacrum. The tip is left if the anus is to be preserved, as the anal muscles are attached to it. The lower part of the presacral fascia is then incised and the hand inserted between the rectum and bladder. The rectum is freed and its lateral ligaments cut between ligatures. The presacral fascia and the peritoneum are cut transversely at the level of the third sacral vertebra, and the hand inserted into the peritoneal cavity grasps the pelvic colon and draws it down. The entire pelvic mesocolon is ligated and cut through. The enlarged lymph glands show how high it is necessary to go. The hole in the peritoneum is then closed, and a tampon placed over it. In amputations, the skin incision is then extended to surround the anus, and this is removed and the colon above severed between clamps. In resections both ends are cut between clamps. In amputations a slit is made in the skin of the left gluteal region, to which the lower end of the bowel is stitched. In this way the wound is not soiled and prolapse does not occur. After resection the bowel is invaginated if long enough; otherwise the ends are united by circular suture and the posterior surface covered by a flap of fascia. If the condition of the bowel or that of the patient is not favourable, the ends are sewed together like a double-barrelled gun and both open ends sewed into the wound. The wound is then closed without any flushing.

No stool should follow for eight or ten days. The tampon should be changed on the second day, at least in part, and the entire dressing changed on the fourth day. Occasionally delirium follows, probably from ptomaine poisoning. Catheterization is required for several days or even weeks. The skin must be carefully treated to prevent bedsores.

In forty-two cases in the last three years there were only two deaths, and this small number is not due to close limitations of indications. Continence was fairly good if the stools were hard and enemas were used. In secondary suture, however, stenosis is frequent; twelve cases (28 per cent) have lived more than three years, and ten more than one year since operation.

Perineal Excision of Rectum and Anus.—X. Delore and A. Chalier[3] claim that perineal excision is preferable to any of the numerous other operations, and base their opinion on 19 cases occurring in the clinique of M. Poncet. Of the nineteen, eight were of epithelioma of the anus, or anus and rectum, and eleven intra-rectal. In five partial retention of the sphincter was possible. In only one case was preliminary colotomy adopted; they prefer to keep it for cases otherwise absolutely inoperable.

Preliminary curettage or cauterization of external growth, when present, is recommended for two days previous to operation, for purposes of asepsis and to enable the anus to be closed at the time of operation. In high cancers exploratory laparotomy is indicated and the abdomino-perineal operation recommended, where practicable at the same time.

The dorsal position is selected, the bladder evacuated, the rectum washed out with peroxide of hydrogen, and if the recto-vaginal septum in females is implicated, minute asepsis of the vagina is carried out.

The anus is closed by suture. Incision is made round the anus, one or more centimetres according to requirements, and an anterior incision along the raphe to the bulb of urethra and a posterior incision to base of coccyx. The incision is carried into the ischiorectal fossa, all bleeding vessels being ligatured, so as not to have forceps in the way. The levator ani is divided between two clamp forceps, and the coccyx removed by chisel or strong scissors, its muscular and ligamentous attachments having first been scraped away; the back of the rectum is cleaned and the glands in hollow of sacrum removed. Great attention is given to hæmostasis as it occurs.

The anterior portion is now fully freed by dissection, and the peritoneal cavity opened if necessary. When it is considered that the rectum has been so drawn down that the entire disease is well below the level of the skin, the peritoneum is to be closed by seroserous sutures, the levator ani sutured, and all catch forceps removed and replaced by ligatures. The rectum is now amputated between two pressure forceps, and removed after the manner of a cyst, the wound not being soiled by bowel contents. The rectum is plugged with iodoform gauze round a rubber tube, and in females the vagina is also plugged. They consider the coccyperineal operation the one of choice, except in very high-lying cancers; two out of nineteen cases died, a mortality of 10·5 per cent.

REFERENCES.—[1]*Centr. f. Chir.*, in *Deut. Zeits. f. Chir.* Bd. lxxxv. p. 508; [2]*Arch. f. klin. Chir.* in *Ther. Gaz.* Dec. 1906; [3]*Rev. de Chir.* May 10, 1907.

RECTUM, PROLAPSE OF.

Sir Charles Ball, M.Ch., F.R.C.S.

Colopexy.—Following the teaching of Gerard Marchand, proctopexy has been largely practised in France for the treatment of prolapsed rectum, while colopexy has been more largely employed in other countries, especially in Germany. Ch. Lenormant[1] considers that owing to the large percentage of recurrences after proctopexy in extensive cases of prolapse, colopexy is in general a better operation.

A complete historical sketch showing the evolution of the operation is given, and priority claimed for Jeannel, February 6th, 1889, who fixed the colon in a case of prolapse of the rectum by means of a colotomy which he subsequently closed. The large number of methods of operation recommended by various surgeons indicate the difficulty of treatment.

The etiology of prolapse is discussed. Jeannel and Verneuil consider relaxation of the pelvic mesocolon, probably the result of inflammation, as the principal factor. Jeannel, in addition to theoretic reasons, adduces the experiments of Raynal, who was unable to produce a prolapse artificially on the cadaver until the mesocolon had been completely divided. Lenormant rejects this view, and considers that the perineal attachments (levatores ani and sacro-recto-genital aponeuroses) constitute the principal safeguard to prolapse, and he points out that in perineal amputation of the rectum it is impossible to draw down the bowel until all these structures have been divided. Allusion is also made to a recent paper by Dix ("Zur Pathogenese des Rectum Prolapses," Thèse de Bonn, 1904), who, following Zuckerkandl, Waldeyer, Ludloff, and Witzel, considers that an abnormal depth of Douglas' pouch is an important factor, the pressure of dilated small intestine in the pouch causing bulging of the anterior wall of the rectum, and so starting the formation of prolapse.

Colopexy of course presupposes the reducibility of prolapse, irreducible prolapse being best treated by excision. It is not pretended that colopexy can re-establish the normal stability of a relaxed rectum, but as in hysteropexy and nephropexy, excellent practical results are obtainable by fixation and suspension.

In most of the recorded cases, fixation was made to the anterior abdominal wall. Lenormant agrees with Rotter in advocating fixation to the left posterolateral wall of the pelvis as a better operation, because the position of the fixed colon more nearly approaches the normal, and it affords a fixed point of suspension.

Fixation to the front abdominal wall is certain, if it is combined with colotomy (colopexotomy), but if only sutured to parietal peritoneum, stretching or even disappearance of the adhesions may follow. Ayant examined two dogs about three months after colopexy had been performed, and found the adhesions had stretched and become lax. Probably many of the failures recorded after colopexy were due to similar stretching of adhesions.

Rotter has with reason suggested that it is better to fix the intestine to a surface denuded of parietal peritoneum.

Colopexy without opening the Peritoneum.—Tuffier attempted fixation of the descending colon by lumbar incision, and MacLeod by means of needles passed through the peritoneum of the anterior abdominal wall (exposed by incision but not opened) and the colon. Both methods are defective, and were therefore abandoned.

After considering in detail the various procedures which have been employed by other surgeons, as to position of incision, selection of surfaces to attach, methods and materials of suture, Lenormant considers that the one which gives the most solid fixation and the best cicatrix, with the best possible hope of preventing recurrence and ventral hernia, is, with slight modifications, the technique recommended by Rotter.

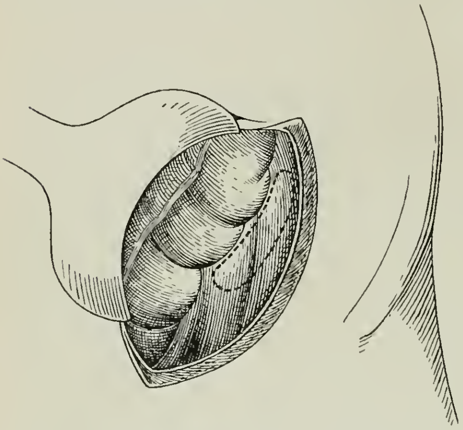

Fig. 80.—Lenormant's Operation. The inner edge of the wound is drawn aside with a large retractor, showing the pelvic colon and peritoneum, covering the iliac fascia. The dotted line indicates the portion of peritoneum which is to be excised.

An incision 12 cms. long is made in the left groin parallel to Poupart's ligament and the iliac crest, and about 3 or 4 cms. above it, the peritoneum is opened, and the inner edge of the incision drawn aside with large retractor (*Fig.* 80).

The prolapse is reduced by traction on the colon, and the portion of colon for fixation selected, which should be as low a piece of the pelvic colon as can be applied to the iliac fossa most naturally. The portion for fixation should occupy about 10 cms. of the bowel, to prevent the formation of a "spur." At the point selected, remove a strip of parietal peritoneum 8 to 10 cms. long by 4 to 5 cms. wide. Apply the colon to the surface denuded of peritoneum, and with a linen thread, suture the mesenteric border of the intestine to the peritoneal edge level with the internal border of the vivified surface (*Fig.* 81). With a second suture unite the free surface of the colon to the external peritoneal edge at a deeper level, so as to include with the peritoneum the sub-peritoneal tissue, the iliac fascia, and some superficial fibres of the iliac muscle. The colon is thus retained by a double

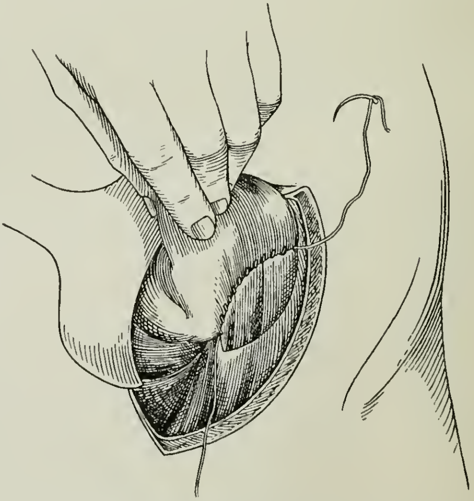

Fig. 81.—Lenormant's Operation. The inner edge of peritoneum has been sutured to the pelvic colon, close to its mesocolic attachment.

suture (*Fig.* 82), and applied throughout the length of its outer aspect to a surface deprived of peritoneum. The abdominal wall is closed in layers.

Modifications of the Typical Operation.—In the case of women where prolapsus uteri is combined with prolapsus recti, fixing of the rectum to the back of the uterus at the same time that hysteropexy is performed has been done by several surgeons. Lenormant suggests that it would be better to fix the rectum to the iliac fossa and the uterus independently.

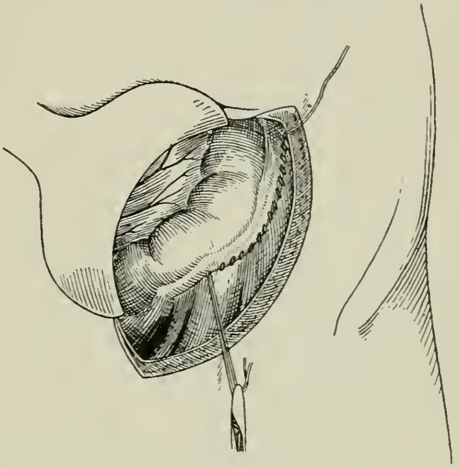

Fig. 82.—Lenormant's Operation. The outer edge of peritoneum has been sutured to the colon, close to the postero-external longitudinal band.

Ludloff has suggested an operation to avoid risk of adhesions stretching, which would have the stability of a colopexotomy without the disadvantage of an external opening. He divides the pelvic colon across, closes the lower end by suture, and fixes it between the thickness of the abdominal muscles after traction. The upper lumen is then implanted laterally in the lower portion of the pelvic colon (*Fig.* 83). He demonstrated the possibility of this operation on dogs. It has since been performed with success on a man, by Gangetano, of Naples, after failure of two simple colopexotomies, but he left the lower opening patent at first to permit of the escape of gas. This fistula closed spontaneously and completely cured the patient.

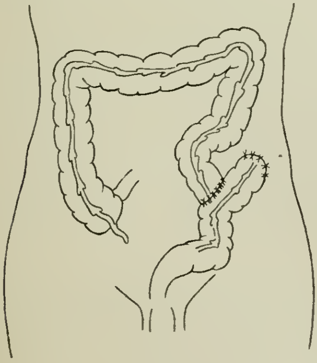

Fig. 83.—Ludloff's Operation.

Bardenheuer and Wenzel have obliterated the cul-de-sac of Douglas as a cure of prolapse, acting on the theory of Zuckerkandl. Von Eiselsberg resected the entire pelvic colon in two cases, once by end to end, and once by lateral anastomosis with Murphy's button. Herzen and Rotter have made free anastomosis between two ends of pelvic colon. Le Nouene, after closing a perforation near the cæcum in a case of enormous prolapse of the entire large intestine, fixed the transverse colon and ascending colon to the abdominal wall, the pelvic colon to the iliac fossa, and completed the operation by ileo-sigmoidostomy.

Out of 103 cases collected by Lenormant only one death, from hæmorrhage from duodenal ulcer, is recorded; of the remaining 102 there were 27 recurrences and 75 cures, Comparing rectopexy and colopexy, Lenormant considers the former useful for moderate cases, not more than 8 or 10 cms. long: the latter for those over 12 to 15 cms. In very extensive cases of prolapse it is considered desirable to supplement colopexy by perineorraphy and myorraphy of the levatores ani.

Newman[2] describes a speculum which he uses for **Linear Cauterization** of the rectum in cases of prolapse and internal piles. It has six vertical fenestræ, 4 ins. long and $\frac{1}{6}$ in. broad. The speculum is introduced with an obturator, which is then removed, and six vertical lines of mucous membrane are seen protruding through the fenestræ, but do not come low enough down to encroach upon the sensitive region of the anal canal. With a hot iron these six ridges of mucous membrane are burnt away. After the operation the patient is kept in bed for three weeks to allow firm union of the scars.

REFERENCES.—[1]*Rev. de Chir.*, Feb. and Mar. 1907; [2]*Lancet*, Dec. 22, 1906.

RECTUM, SURGERY OF. (*See also* HÆMORRHOIDS.)

Sir Charles Ball, M.Ch., F.R.C.S.

Spontaneous Rupture of the Rectum.—Heineke[1] records a remarkable case, and states that he has been unable to find another record since the eight cases collected by Quénu in 1882. The patient, aged thirty years, was strong and in perfect health, never previously having had rectal trouble. While lifting a heavy weight with the body bent forcibly forward, he felt violent pain in the belly. He vomited, and twenty hours afterwards was brought to the surgical clinic at Leipsic in a state of profound collapse, the belly tumid and extremely sensitive, especially in the lower portion. The abdomen was at once opened, and a quantity of seropurulent fluid escaped in which were mixed a number of caraway seeds, but no other obvious fæcal matter. The abdomen was eviscerated, but no perforation was found. Drainage was employed, but the patient died in two days. At the autopsy, a rupture was found on the posterior surface of the rectum 17 cms. from the anus. There was no ulcer or other lesion of the bowel wall, which appeared to be normal.

The remarkable features of this case were the absolute normal condition of the bowel—most of the cases collected by Quénu were associated with prolapsus recti, and diagnosed by the protrusion of small intestine at the anus,—and also the fact that it occurred in a man, all but one of Quénu's cases being met with in women.

Suppuration in Superior Pelvirectal Space.—Picque[2] describes the case of a man, aged 54, who presented symptoms of severe infection. Some inflamed piles were seen projecting from the anus, from which issued a very offensive discharge. The perineum was protruded by a tense swelling, red and purple in places

An incision made on the right side evacuated a quantity of gangrenous pus from the ischiorectal fossa. A perforation was found in the levator ani communicating with a collection of pus in the superior pelvirectal space, and also a perforation in the wall of the rectum above the attachment of the levator ani. The operation was completed by continuing the first incision round behind the anus to the other side. The levator ani was divided over the whole extent of this wound, so that the superior pelvic rectal space was opened up by a large horseshoe incision, and the abscess cavity was washed out with peroxide of hydrogen and plugged with gauze. The patient made a good recovery, but had incontinence for some months.

The author insists on the necessity of early diagnosis and energetic treatment of these cases. The diagnosis is to be made by the appearance of the perineal swelling, which is bilateral, giving the impression that the whole perineum is pushed forward *en masse*, and not confined to one side as in ordinary ischiorectal abscess. The tenderness round the anus is also equal on both sides. The treatment is to be immediate, by a long U-shaped incision round the posterior aspect of the rectum.

Non-Malignant Stricture of Rectum.—Sweet[3] calls in question the usually accepted theory that the majority of these cases are syphilitic, and cites R. J. Godlee's clinical lectures in support of this view. He points out that gonorrhœal inflammation produces much fibrosis, and gives a case of his own in support of this view. A man, aged 27, had gonorrhœa eighteen months previously. He was circumcised when a boy, so there was nothing to prevent dissemination of infection. He had warts on the perineum and round the anus, between two of which there was a fistula, which upon operation proved to be surrounded by a dense mass of fibrous tissue. There is no record of examination for gonococci.

Congenital Malformation.—Kroemer[4] deals with the question of vulvar anus, and its treatment. He favours the method of transplantation. and records a case in which an incision was carried from the site of the normal anus along the middle line of the perineum to the vulvar anus. This was then dissected out entire, with the tube of bowel leading to it, and replaced in its normal site, the perineum being closed by suture. The case was quite successful.

REFERENCES.—[1]*Beitr. z. klin. Chir.* in *La Sem. Méd.* Sept. 12, 1906; [2]*Gaz. des Hôp.* Jan. 22, 1907; [3]*Brit. Med. Jour.* Sept. 22, 1906; [4]*Münch. med. Woch.* Mar. 5, 1907.

REFRACTION, ERRORS OF.

A. Hugh Thompson, M.D.

Influence of Glycosuria on Refraction.—A case in which an increase in myopia was shown to be dependent on glycosuria, the refraction returning to its former state when the glycosuria was got rid of by dieting, led Gould[1] to investigate this subject. Several cases have been reported, while in some the opposite condition, viz., an increase of hypermetropia as the result of glycosuria, has been alleged. These latter cases, however, in Gould's opinion, are merely instances of errors in observation, as it is hard to understand how an increase in the density of one of the refracting media could remove the focus for rays entering the eye to a point further off than before. An unexplained alteration in the refraction, especially in the direction of an increase of myopia, occurring in a patient whose refraction has been stable for a number of years, should always suggest the advisability of examining his urine.

Relation between Myopia and the Shape of the Orbit.—An important investigation on this subject has been undertaken by Ask, a review of whose work from the pen of the present writer may be quoted from the *Ophthalmic Review*[2]:—

" A controversy has for some years been carried on in Germany between the advocates and opponents of Stilling's theory of 'school' myopia. Put shortly, the theory is that the chief factor in the production of those low or moderate degrees of myopia in which there is no disease of the fundus, is the pressure of the tendon of the superior oblique muscle as it passes from its pulley to its insertion. It is only during the period of growth in size of the eyeball that this pressure is important, and the more there is actual contact between the tendon and the eyeball the greater will be the tendency for the growth of the globe to take place in the direction of least resistance, i.e., in the antero-posterior direction. Hence, according to Stilling, the position of the pulley is of great importance; the lower it is the greater the length of its contact with the globe, and since it is always lower in low orbits than in high ones, there is a direct ratio between the prevalence of myopia in any race of people and their orbital index, those races with a low orbital index being relatively more liable to acquire myopia. Put in this way, the theory seems to emphasize the racial aspect of the question in a way which may seem to leave the hygienic aspect out of sight, and it is probably for this reason that the late Professor Cohn and others specially interested in school hygiene have been inclined to look upon Stilling's theory as a dangerous heresy. But in truth there is nothing in the theory itself to belittle the importance of school hygiene. On the contrary, it explains better than any other theory how the maintenance of the downward and inward position of the eyeball for prolonged periods may be injurious to adolescents, and, further than that, it points to a method by which those children specially liable to develop myopia can be distinguished from others. The best way to test the theory is by careful measurements of the orbits in both myopes and non-myopes. It is a record of such measurements that is contained in the papers under review.

" The height of the orbit is the greatest vertical distance between its upper and lower margins; its width needs more careful definition, and is taken by Ask to be the distance from the most external part of the temporal margin to the insertion of the internal palpebral ligament. The height, × 100, divided by the width, gives the index, and orbits are divided by anthropologists into low, medium, and high, according as their indices are respectively under 80, between 80 and 85, and over 85. In this classification the average appears to be put too low, for in all recent measurements the majority of orbits have had indices over 85. The following figures bear on the relation between a low orbit and myopia :—

" Hamburger, an opponent of Stilling's theory, measured 118 myopes, and found the proportion of those with indices less than 85 to those with indices greater than 85 as 24·6 : 75·4, or about 1 : 3. With 67 non-myopes the proportion was as 12 : 88, or about 1 : 7. Gelpke, out of 111 myopes, found those with indices less than 85 as 40 : 60, while out of 53 non-myopes the proportion was the same as Hamburger's, i.e., 12 : 88. Moreover Gelpke found that of eleven cases with very low orbits, i.e., with an index under 80, not a single one was found among the 53 non-myopes, but all among the myopes. Chery found, as a result of 250 orbital measurements, the average index in myopes among children, students, and older people respectively, to be 81·3, 82·7, and 83·1, while the average index in non-myopes in the same three classes respectively was 92·7, 87·6, and 87·3.

" Ask has undertaken an investigation on a larger scale, having taken as many as 1032 orbital measurements and refractions among Swedish students and teachers. The average orbital index for the whole number was 86·32, that for the whole number of myopic eyes (343) was 83·29, that for the whole number of non-myopic eyes (689) was 87·83. If allowance is made for the soft parts, the true orbital index of the skull in each case would be less by about 1·4—so Ask found by some measurements carried out in the post-mortem room—but the relative value of the above figures would remain unchanged. These results agree absolutely with those already mentioned, and tend to confirm Stilling's theory. It may at any rate be taken as proved that among students and teachers those who are short-sighted have on the average a lower orbital index than those who are not.

" A circumstance which at first sight seems inconsistent with the above is that when we consider hypermetropes in relation to emmetropes no corresponding relation holds true, i.e., the orbital index of the former is on the average no higher than that of the latter. This is explained by Ask as follows :—A hypermetropic eye is one whose growth has ceased unduly soon, and since it is only on the eye during its period of growth that the pressure of the superior oblique tendon has any important effect, it makes no difference, so far as hypermetropes are concerned, whether the orbit is low or high.

" Another criticism that has been brought against Stilling's theory is that among anisometropes there is little, if any, relation between the respective lowness of the two orbits and the length of the globes. In so far as the cases in which the measurements have been taken have been hypermetropic in one eye and emmetropic in the other, the objection has already been answered. In so far as they have been myopic in both eyes, the myopia in one eye being much in excess of that in the other, the condition has been in many cases due to disease with which the theory has nothing to do. In other instances Ask's measurements in eighteen cases tend to prove that a relation, such as might be expected, does exist. In eleven of these the non-myopic eye had the higher orbital index ; in five they were equal, and in only two was the higher orbital index found in the myopic eye.

"These papers then are of some weight as supporting Stilling's theory, and the more so as their author set out, as he tells us, with no preconceived ideas in its favour. They also, however, afford some evidence as to the real importance of hygienic measures. From another series of measurements carried out on skulls, Ask concludes that there is a direct relation between the shape of the orbit and the shape of the face, a low orbital going with a low facial index, and *vice versa*. Now in Sweden it appears the predominant type of face is broad, and, according to Stilling's theory, school myopia should be relatively frequent. This, it appears, was so twenty or thirty years ago, when more than half of the older students in the higher grade schools were myopic. In the interval much attention has been paid to seating and lighting and to the provision of suitably printed books. Still more important probably has been the greater interest taken in outdoor games and sports in recent years. The result, it appears, is that there has been a notable decrease in the number of myopes. Only 29 per cent of the cases measured by Ask, all of them men who either were or had been students, were myopic in any degree."

REFERENCES.—[1]*Med. Rec.* April 20, 1907; [2]*Zeits. f. Augenheilk.* July and Aug. 1906, in *Ophth. Rev.* Feb. 1907.

RETINA, DISEASES OF.

A. Hugh Thompson, M.D.

The Pressure-bandage in Detachment of the Retina.—Freytag[1] argues that this mode of treatment is not only useless, but may be positively harmful. The chief point that he makes is that the sudden diminution of tension attendant on the inevitable changing of the bandage must favour the entrance of fluid into the globe, which, with a retina already detached, will tend to make its reattachment more difficult.

REFERENCE.—[1]*Münch. med. Woch.* Aug. 27, 1907.

RHEUMATIC FEVER.

The **Salicyl** compounds may be given in various ways: **Aspirin**, gr. x–xv, or **Salicin** in the same quantity, may be given in cachets. The Sodium Salt is as good as either of these if given in the following way: ℞ Sodii Salicyl., gr. xx; Sodii Bicarb., gr. xxx; Syr. Aurantii, ʒj, or Tinct. Cardam. Co., ʒss; Aq. ad ℥j. In a severe case in an adult give it every hour for three doses, then every two hours for three doses, then every four hours till the temperature is normal. Toxic symptoms are averted by the use of the **Bicarbonate of Soda**, and also by giving **Sodium Sulphate**, ʒj to ʒij, every morning in water. When defervescence is accomplished reduce the salicylate to six-hourly, and then to eight-hourly, doses before leaving it off. Toxic symptoms are tinnitus, deafness, headache, vomiting, visual hallucinations, pallor, and clammy sweats.

RHEUMATOID ARTHRITIS.

(*Vol.* 1905, *p.* 510)—In the acute stage enjoin **Rest**. **Antipyrin**, gr. v, often relieves pain, with **Hot Compresses**, **Oil of Wintergreen**, or the **Ice Bag** by way of local treatment. **Guaiacol** is sometimes useful. After the acute stage feed the patient up, treat constipation, dyspepsia, dental caries or pyorrhœa, and other foci of septic infection, and prescribe **Massage** with **Movements**, both active and passive. **Hot Air Baths** up to 30 minutes may help. For *Monarticular Arthritis* counter-irritation by the **Superficial Cautery** or **Blistering** is recommended, especially where the hip is concerned.

RHINOPHARYNGITIS MUTILANS. *J. W. W. Stephens, M.D.*

O. J. Mink and N. T. McLean[1] describe this affection under the name *Gangosa* in the Ladrone and Caroline Islands. It is a rapidly-progressing ulceration of the pharyngeal mucosa, involving sometimes the hard palate, nose, eyes, and face. It is rarely fatal. In children, however, a fulminating form occurs, fatal in forty-eight hours, and closely resembling diphtheria (no Klebs-Löffler bacilli). **Tincture of Iodine** is the best local treatment, or even the **Actual Cautery.** As a deodorant 1 per cent **Potassium Permanganate** is the best. **X-Rays** or **Light** treatment are also suggested by the authors.

REFERENCE.—[1]*Jour. Amer. Med. Assoc.* Oct. 10, 1906.

RHINOPHYMA.

(*Vol.* 1903, *p.* 594)—The nose may be **Shaved** with a razor, under chloroform, to the desired dimensions; bleeding is controlled by **Adrenalin**, and the surface treated with the **Thermo-Cautery.**

RHINOSPORIDIUM KINEALYI. *J. W. W. Stephens, M.D.*

J. M. Beattie[1] describes a second case of infection with this parasite. It is found in nasal polypi. The tissue is studded with minute white dots visible to the naked eye. These consist of cysts, which occur in great numbers in the subepithelial tissue: (1) Small cysts, 0·1–0·3 mm., are filled with undifferentiated protoplasm. These are the trophozoites. (2) Large cysts, 6 to 8 mm., filled with ovoid spore masses (*Morulæ*). Each morula contains four to sixteen spores.

REFERENCE.—[1]*Brit. Med. Jour.* Dec. 1, 1906.

RICKETS (Adolescent or Late). *Robt. Hutchison, M.D.*

Mr. H. H. Clutton[1] gave an address on this disease at the opening meeting of the last session of the Clinical Society of London, which was followed by a general discussion. He described the following case which occurred at St. Thomas's Hospital in 1904, and which may be regarded as typical:—

The patient, a man 21 years of age, was of Italian parentage on his father's side, and the second child of a family of five, none of whom were the subject of rickets in infancy. Dentition was not delayed, and he began to walk at the usual time. There was no enlargement or curvature of the long bones during childhood. Between the ages of eleven and twelve years the patient was first noticed by his parents to walk badly. He was at that time taken to one of the orthopædic hospitals, where he was ordered steel supports for genu valgum of both limbs. These he wore for two years without any apparent improvement. He was then taken to Guy's Hospital—at the age of sixteen years—where osteotomy of both femora was performed and plaster-of-Paris was applied for three months. After this treatment the lower limbs were quite straight, and remained so for three years. At this time, at the age of nineteen years, the left femur was noticed to be bending again, and an "iron" was ordered, which seemed to correct the deformity. At the age of twenty years, the legs began to drop backwards at the knees. The right leg, which had no support, rapidly showed the greater deformity. His parents were not poor people, so that he had always been well fed. There is one point which should be mentioned here, as it illustrates one of the possible contributory causes for this trouble. His school life had been a hard one. He had had to walk three miles from his home to school and three miles back. He had worked at night till 11 o'clock, and had gained a scholarship by examination as a result. He left school at sixteen years of age, and became a clerk in the City, working at a desk from 10 a.m. to 6 or 8 p.m. His young life had therefore been strenuous.

At present (February, 1904) the patient is a feeble-looking, narrow-chested youth, without hair on his face, looking much younger than his twenty-one years (*Plate XXIX, Fig. A*). His occupation is that of a clerk in an office, where he is able to do an ordinary day's work. His weight is 6 st. 5½ lb., and his height 5 ft. ½ in. It will be noticed that all the epiphyses appear to be larger than normal. But the most striking feature is the deformity at the knees, which appear at first sight to have undergone some displacement at the joints or at the epiphyses. The radiographs show most distinctly that the deformity is due to an antero-posterior curvature, of which the articulation is the centre, and that the bending has taken place in each bone on the diaphyseal side of the epiphyses. In *Fig. B* the combined curvatures of the femora and tibiæ give one the general impression of genu recurvatum in both lower extremities. In looking for an explanation of these curvatures it will be seen that the radiograph shows an imperfect ossification of the shafts of both femora and tibiæ. The ends of their diaphyses adjoining the epiphyses are large and bulbous (*Figs. B* and *C*), but they have only a thin shell of bone. The epiphyses themselves are not far removed from the normal condition for the age of the patient, except that the line is more distinct than it should be. Much the same condition is seen in the upper end of the left humerus, which is probably curved from muscular action. Indeed at one spot—the apex of the curve—the cortical bone appears to be absent. There is no marked proliferation at the epiphyseal lines such as you would expect to see in the acute stage of active rickets. They would rather give one the impression of the acute stage having passed away, leaving behind a very feeble diaphysis at that part which immediately adjoins the epiphysis. In confirmation of this view, radiographs of the wrists show that the epiphyses of both the long bones are in exactly the same condition as are those of young children who are the victims of active rickets. There is marked proliferation of imperfect bone, with very considerable enlargement of the epiphyseal line, and the adjoining diaphysis is feeble but has no marked swelling as is seen in the femur. The bones of the forearms have not become curved, as they have not been forced to carry weight as in the case of the lower extremities. The skull shows no changes, probably because ossification was complete before the onset of the disease. Coxa vara does not exist, possibly for the same reason. The curvatures of the femora and tibiæ, which are so close to the epiphyseal lines, suggest that imperfect ossification has been going on for some years. The result of such feeble ossification is shown in the skiagrams by the hollow shaft in the part immediately adjoining the epiphysis, and by the fact that this is the part which has yielded to the weight of the body and produced a well-marked curvature. In the case of the left humerus the curvature is a little further removed from the epiphyseal line. The disease in the wrists appears, on the other hand, to be more recent and to be still in the active stage, and without such evidence as they give one might possibly doubt whether after all the curvature at the knees and shoulder was due to rickets.

From a study of this and similar cases the writer concludes that adolescent rickets must be regarded as pathologically the same disease as infantile rickets, but modified in some respects by the age of the patient. The question naturally arises as to whether the adolescent form is merely a continuation of infantile rickets or entirely a fresh and distinct development. It might, of course, be a recrudescence of what the child had suffered in infancy. Against this latter view is the fact that on recovery from infantile rickets the bones are as a rule

LATE RICKETS.

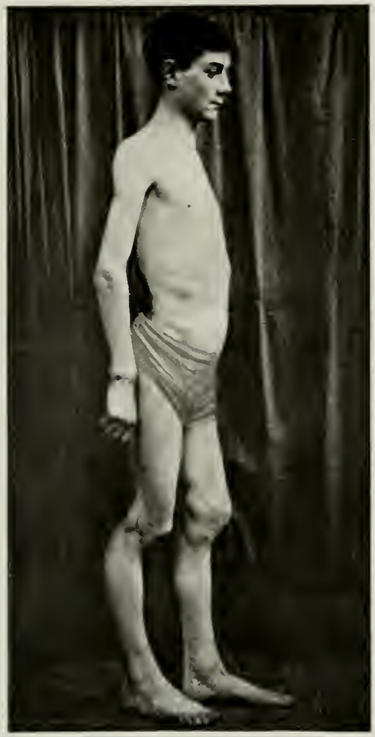

Fig. A.

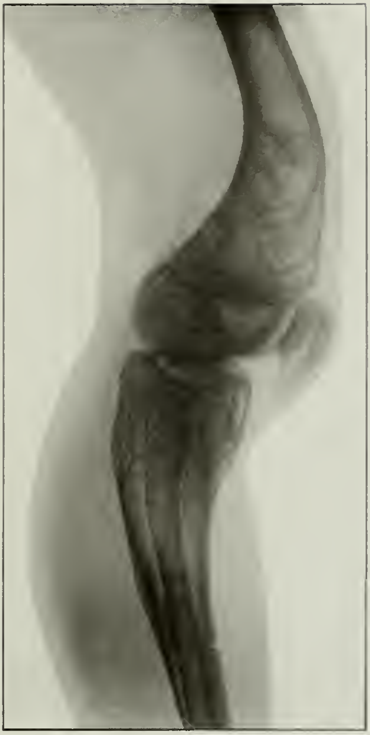

Fig. B.

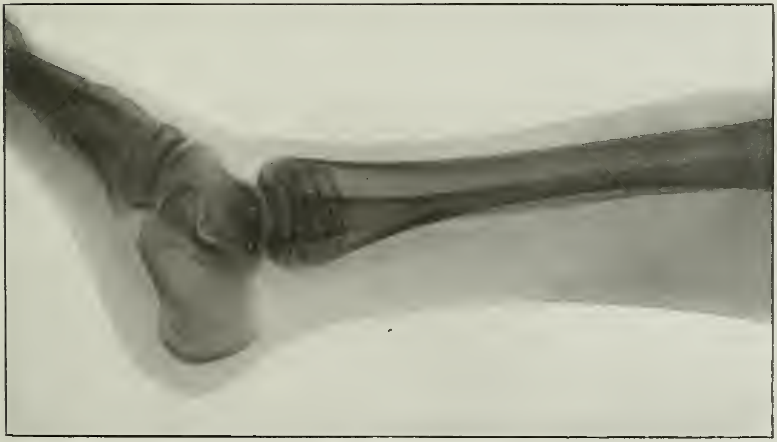

Fig. C.

Mr. H. H. Clutton's Case.

sclerotic, a condition in which one would imagine a relapse would be unlikely to occur. On the other hand, if it be considered to be a continuation of infantile rickets, the first attack must have been very mild and without any tendency to recovery; for there is no history by which we can say definitely that the patient has suffered from rickets in infancy. He is inclined, therefore, to look upon adolescent rickets in many cases as a *distinct* development of the same disease arising in circumstances which are chiefly due to the age of the patient. If this be accepted we must assume that rickets may arise at any age from infancy to adolescence.

Coutts[2] also records a case of the disease in a girl of seven, but admits that whether it is really identical with infantile rickets may be open to question. Contrasting "late" with infantile rickets, in the older patients the disease is much more persistent, lasting usually for many years; there is an absence of constitutional disturbances, the shafts of the affected bones become much softer, and in later stages multiple osteotomies are much more often called for at the hands of the surgeons. In a large proportion of cases of "late rickets" there is a history of the patient having suffered and recovered from rickets in infancy. The frequency of this association has led many observers to assert that every case of "late rickets" is a recrudescence of an infantile rickets that has been recovered from, and the name "recrudescent rickets" is sometimes used in preference to the one more commonly employed. To prove a negative is as impossible as it is to guarantee the absolute freedom of an older person from having suffered from some degree of rickets in infancy. But in many cases of "late rickets" there is no history of rickets in infancy obtainable, and this was so in three out of five cases of which he has personal knowledge. On these grounds he prefers the more commonly accepted term "late rickets" to that of "recrudescent rickets," and is inclined to agree with Clutton that rickets may have its primary onset at periods of life far beyond the infantile age. This appears to have been also the general view in the discussion above referred to.

REFERENCES.—[1]*Lancet*, Nov. 10, 1906; [2]*West Lond. Med. Jour.* Jan. 1907.

RINGWORM. (*See also* RODENT ULCER.)

(*Vol.* 1904, *p.* 55; *Vol.* 1907, *p.* 73)—Any number of applications are recommended. **X Rays** are of considerable value, and are said to have effected a revolution in the treatment of this disease. (*Vol.* 1889, *p.* 499)—Lyle advises, for chronic cases, that the head should be kept shaved. the patches scraped with a sharp spoon, and treated twice weekly to thorough friction with **Silver Nitrate**, ʒj in Proof Spirit ℥j, and the head generally treated with **Mercuric Oleate**, 5 per cent, in Olive Oil. (*Vol.* 1901, *p.* 483)—Jamieson says the scalp must be kept bare, and washed twice with a **Superfatted Potash Soap**. Rub in, for 10 minutes twice daily, an ointment, consisting of: Precipitated Sulphur, ʒj; Salicylic Acid, β-Naphthol, or Thymol, and Ammoniated Mercury, of each 10 grains; Lanolin ℥j.

RODENT ULCER.

E. Graham Little, M.D., F.R.C.P.

The use of **Electrolysis of Metallic-salt Solutions** in promoting the absorption by the skin of the metal set free, and thus producing tissue reparation, has been attended with excellent results in the hands of Lewis Jones.[1] The method has been tried for rodent ulcer, and is thus described by him: An ordinary continuous current battery is used; to the wire from the negative terminal is attached a flat pad, which is soaked in plain water, and applied to any convenient part of the patient; to the positive wire is attached an electrode made of zinc, which must be freshly cleaned or amalgamated. Several layers of lint are wrapped round this electrode, and saturated with a 2 per cent solution of zinc sulphate in distilled water. The positive electrode thus prepared is pressed upon the diseased part, and a current of 5 to 10 ma. is used for about ten minutes. The explanation given of the effect is, that electrolysis of a solution of zinc tends to cause a concentration of zinc at the negative pole—i.e., the "zinc ions," as these electrically-charged atoms of zinc are called, move towards the negative pole from the positive, and in so doing when this positive electrode is placed on the skin, zinc atoms actually penetrate its cells.

This method of causing penetration of drugs into the skin is available with other materials than zinc. In general terms, it may be said that the positive electrode must be applied to the diseased tissue when the introduction of alkaloids or metals is the aim, while the negative electrode must be used where the penetration of acids is desired. The amount of the drug thus introduced into the skin may be measured by multiplying the electro-chemical equivalent of the metal used by the magnitude of the current and the duration of the application. With zinc, for example, a current of 10 ma. for ten minutes causes the local absorption of a little over 2 mgrams of the metal. Solution of cocaine and adrenalin used similarly produced greater physiological effects than mere apposition of the solution to the skin could cause. **Zinc Solutions** were used for rodent ulcer; **Magnesium Solutions** for warts; and Lewis Jones found that a similar treatment, with the use of **Copper Solutions**, caused the apparent cure of ringworm patches on the scalp.

REFERENCE.—[1] *Brit. Med. Jour.* Feb. 16, 1907.

ROSACEA.

(*Vol.* 1905, *p.* 514)—Regulation of diet (to the exclusion of alcohol and other gastric irritants) is absolutely necessary. Shoemaker recommends **Galvanism**, with the cathode on the spots and the anode on the back of the neck, and the following ointment, to be rubbed into the spots after sponging them with hot water: ℞ Ac. Salicyl., ʒss; Ol. Eucalypti, ♏x; Creosoti, ♏v; Ung. Aq. Rosæ, ℥ss; Ung. Zinci Oxidi, ℥ss. If papules and pustules are present, use **Ung. Hydrarg. Ammon.** (gr. x ad ʒj).

SALIVARY GLANDS, ENLARGEMENT OF, IN INFANTS. (*See* NEW-BORN, DISEASES OF.)

SALPINGITIS. (*See* FALLOPIAN TUBE.)

SCABIES.

E. Graham Little, M.D., F.R.C.P.

Porter[1] recommends the following treatment for scabies, which has been tried with success in the military garrison at Colchester in fifty-one cases. The patient should lie in a very hot bath for at least half an hour, and be thoroughly scrubbed with flannel and ordinary soap. He is then quickly dried and varnished all over with a mixture of

Balsam of Peru, 3 oz ; glycerin, 1 oz. This is rubbed into the skin with a soft nail-brush. He is then dressed in hospital clothing, and his own garments are sent to be disinfected. The average detention in the hospital, due solely to the difficulty of getting the clothes disinfected, is three days. The patient is told to abstain from washing off the varnish for seven days. This treatment is efficacious, and it does not lead to dermatitis, as in the case of sulphur applications.

REFERENCE.—[1]*Brit. Med. Jour.* Mar. 20, 1907.

SCABIES.

(*Vol.* 1906, *p.* 441)—Babies need a treatment less irritant than that usually adopted for adults. Gaston suggests : (1) An **Alkaline Bath** (Potass. Carbonat., gr. x–xx) at night ; the patient is then soaped with (2) Oil of Thyme, ·8 ; Olive Oil, 6 ; Potass. Sulphurata, 80 ; and White Soap, 17. The patient is dried, and, (3) Balsam of Peru and Styrax Ointment, 20 ; Camphorated Chamomile Oil, 100 ; is rubbed in. Next day apply (4) Sulphur Præcip., 1 ; Borate of Soda, 2 ; Vaselin, 15 ; Lanolin, 15 ; Oxide of Zinc, 10. In cases with eczema or impetigo superadded, use 5 to 10 per cent Balsam of Peru in Olive Oil, and then rub in Precipitated Sulphur, 25 ; Carbonate of Soda, 2 ; Glycerin of Starch, 25 ; Oil of Cade, 5 ; using also (1) and (2).

SCARLET FEVER.

E. W. Goodall, M.D.

ETIOLOGY.—H. Poole Berry,[1] from a study of an epidemic of scarlet fever at Grantham, came to the conclusion that some of the patients retained infectivity for a much longer period than has hitherto been accepted as not unusual : for several months, in fact. He had not noticed cases of this sort in previous epidemics.

Instances of the manner in which the infection of this disease will hang about an imperfectly disinfected house for a long period are given by Trotter.[2]

An interesting comparison between home and hospital isolation in scarlet fever for a period of thirteen years has been made by Malet at Wolverhampton. Including "return cases," he found that when removal to hospital was practised, the incidence of attacks on those remaining at home was 5·3 per cent ; but when the patient was kept at home for isolation, the incidence of further cases was 16·6 per cent.

Reports of outbreaks due to infected milk are recorded by Archibald (Glasgow) and Newsholme (Brighton).[3] The Brighton epidemic began suddenly in the middle of October, 1906. Prompt investigation showed that the milk from a certain farm was implicated. Prompt action on the part of the Sanitary Authority, with the co-operation of the dairymen and farmer, brought the outbreak under immediate and complete control, so that in a few days it was at an end. It should be mentioned that a year previously the Sanitary Authority had made arrangements with the local dairymen by which the source of any particular delivery of milk could be readily and easily traced. Besides well-marked cases of scarlet fever, there were a number of cases of sore throat without rash. In families where the milk was habitually boiled before it was consumed, no cases of scarlet fever or sore throat occurred. How this milk was contaminated was not explained ; possibly it was by a cowman who had been visiting his child, who was lying ill with scarlet fever in a hospital.

Pathology.—An investigation of the opsonic index of cases of scarlet fever with streptococci (four strains) has been made by A. G. Banks,[4] who has come to the following conclusions :—

1. In cases of scarlet fever running a fairly normal course, the opsonic power varies in a pretty definite and constant way. It is decreased during the early febrile period, and rises to normal or above normal with the defervescence and general decline of symptoms. It falls during the second and third weeks, and even in uncomplicated cases the opsonic index may be comparatively low. There is an increase to normal or over during the fourth and fifth weeks.
2. In fatal cases with severe angina, the opsonic power is markedly subnormal.
3. Complications alter the usual course, causing both relative and absolute differences. Thus the opsonic power is increased at the onset, and during the earlier period of albuminuria, severe nephritis, and adenitis ; as convalescence is established the quantity of opsonin rises.
4. Support is lent to the view that nephritis is due mainly, if not entirely, to streptococcal invasion of the kidney.
5. The opsonic values do not furnish many data for prognosis, but in general a persistent low index during nephritis or other serious complication is an unfavourable sign.
6. A definite relationship to the *Streptococcus scarlatinæ* has been demonstrated, but there is no striking difference in the results obtained with typical and atypical varieties respectively of this organism.

Diagnosis.—In most cases the prodromal period is short, the rash usually coming out within forty-eight hours ; but its appearance may be delayed till the third or fourth day, or even longer, especially in severe cases with marked faucial lesions. These cases are not infrequently diagnosed as diphtheria, because of the absence of the rash at first. Sometimes there is little or no rash. "The symptoms that seem to distinguish the disease from diphtheria are continued pyrexia, restlessness, and delirium, acute and extensive faucial inflammation, with much swelling ; usually no definite false membrane, but patches of inspissated mucus, or cheesy excretion, with abundant flow of muco-pus ; the throat is very painful, which is not the rule in diphtheria ; diphtheria antitoxin has no effect on this condition of the fauces ; often the patient wastes rapidly." Vomiting is a very common early sign of scarlet fever ; it may be so frequent as to bring about collapse. It is doubtful if prodromal rashes ever occur in scarlet fever ; but often the rash first appears as a uniform erythema, which later becomes punctate.

The only sign of an attack of scarlet fever may be a punctate eruption. In such cases the correct diagnosis can only be made if characteristic sequelæ occur (arthritis, nephritis) or other cases arise. "In these cases of apyretic scarlet fever the pulse-rate is raised ; this is a valuable sign when it is a question of the diagnosis of scarlet fever on the one hand, and German measles, an enema rash, or a prodromal chicken-pox rash, on the other. But an increase in the pulse-rate out of proportion to the temperature is of no value in distinguishing from one another the early stages of scarlet fever, diphtheria, measles, typhoid fever, and, in short, of most of the serious infectious diseases of this country."[5]

In an address on the exanthem of scarlet fever, MacCombie[6] discusses the diagnosis of that disease from the prodromal scarlatiniform rashes of small-pox. In some cases this prodromal rash is purely punctate, and confined to the trunk and thighs, being especially evident in the groins, flanks, and axillary regions; in others it is limited to the flexures, and does not affect the trunk generally. These rashes come out on the second or third day, before the proper eruption appears. Their colour is brick red, and is deepest at the flexures. They consist almost entirely of rather large puncta. In hæmorrhagic small-pox a prodromal rash is met with which consists of a "most complete investment of the skin with a vivid red erythema closely resembling that of scarlet fever." It comes out on the second day, affects the whole skin, including the face, and at first is not punctate. In twenty-four hours the tint becomes darker, petechiæ appear, and later still, purpura, hæmaturia, and subconjunctival hæmorrhage.

TREATMENT.—B. Franklin Royer,[7] of Philadelphia, advocates the routine use of **Chloral Hydrate** in scarlet fever, with the purpose of lessening the incidence of nephritis. In the paper in which he relates his experience, he does not mention the exact dosage of the drug, but states that it was given in "doses of sufficient size to produce light somnolence." [I do not think Royer's figures quite justify his conclusions, at any rate as regards the nephritis.—E. W. G.]

REFERENCES.—[1]*Lancet*. Jan. 12, 1907; [2]*Public Health*, Sept. 1907; [3]*Ibid.*; [4]*Jour. Path. and Bact.* Oct. 1907; [5]*Brit. Med. Jour.* Aug. 17, 1907; [6]*Ibid.* Dec. 22, 1907; [7]*Ther. Gaz.* Jan. 1907.

SCHISTOSOMUM HÆMATOBIUM (Bilharzia). *J. W. W. Stephens, M.D.*

P. G. Stock[1] gives data regarding the occurrence of hæmaturia due to this cause in soldiers just arrived from England in Pretoria, which enable him to fix the incubation period as a minimum of one month and a maximum of two months, with an average period of six weeks. He records cases where the ova of this worm disappeared when the patient contracted enteric fever, and did not reappear. A "toxin" treatment is suggested.

REFERENCE.—[1]*Lancet*, Sept. 1906.

SCIATICA.

(*Vol.* 1906, *p.* 442)—Exclude intrapelvic disease and arthritis of the hip. In acute cases order rest in bed with a well-padded splint. Open the bowels with **Calomel** and a **Saline**, and control pain by **Aspirin** or **Phenacetin**. Avoid Morphia if possible. In subacute and chronic cases use **Massage**, and recommend **Hydrotherapy** (Bath, Buxton, Droitwich, Acqui in N. Italy). The **Constant Current** may be sedative, and **Blisters** are sometimes useful. For those who cannot go away, **Hot Baths** at home may be effective. **Operation** is only indicated for very intractable cases.

SCLEREMA, INFANTILE. (*See* NEW-BORN, DISEASES OF.)

SCLEREMA NEONATORUM.

E. Graham Little, M.D., F.R.C.P.

Waterhouse[1] reports a case of this rare affection. The infant was a female, born of apparently healthy parents, and the condition was noted on the buttocks four days after birth. Patches of induration were present on the lumbar and upper sacral regions, over each deltoid, and on the buttocks and outer side of each thigh. The child appeared to do well with small doses of grey powder. The frequency of pulse and respiration was increased throughout the time of observation, the lowest pulse-rate recorded being 116, and the lowest respiration-rate 30 per minute. About two months after birth, she began to develop a high temperature, became very ill, and rapidly sank and died. At the post-mortem examination the sclerosed areas, upon being cut through with a knife, showed a replacement of the fat of the panniculus adiposus by a stearine-like deposit, like inspissated sebum. No trace of normal human fat could be found anywhere; it was completely absent even in the omentum and round the kidney. The brain, heart, lungs, thymus, liver, spleen, kidneys, adrenals, and alimentary canal presented no abnormality, with the exception possibly of a slight degree of congestion. (*See also* NEW-BORN, DISEASES OF.)

REFERENCE.—[1] *Lancet,* Nov. 10, 1906.

SCLERODERMA AND MYOSITIS.

E. Graham Little, M.D., F.R.C.P.

Nixon[1] reports four cases of scleroderma in which there were both skin and muscle changes.

A concomitant sclerosis of muscle as well as of skin has been noted several times, and there is a considerable volume of literature on the subject, of which a bibliography is appended in this paper. Nixon thinks that these cases tend to show that in scleroderma the muscle and skin changes are together merely a local manifestation of a general disease, an infective inflammatory affection resembling in many points the rheumatic infection.

REFERENCE.—[1] *Lancet,* Jan. 12, 1907.

SCURVY, INFANTILE.

(*Vol.* 1905, *p.* 523)—The diet should consist of fresh unboiled milk with potato soup or vegetable broth, raw meat juice, and orange juice. Sterilized milk and desiccated foods are to be stopped. Immobilize the legs by placing them between sandbags. Cheadle's **Potato Cream** is made as follows: A thoroughly steamed floury potato is rubbed through a fine sieve, and beaten up with milk till it is smooth and of the consistence of thin cream. A similar preparation may be made from carrots. Give it in the bottle of milk, beginning with a teaspoonful to each bottle, and increasing the dose.

SEA-SICKNESS

(*Vol.* 1905, *p.* 524)—**Anæsthesin** in 7-gr. doses given three or four times before sickness has begun is said to prevent its onset. (*Vol.* 1906, *p.* 47)—**Validol** (♏ x–xv on sugar) is also recommended. (*Vol.* 1906, *p.* 446)—Corning gives a tablet of **Hyoscine Hydrobromide**, gr. $\frac{1}{100}$, with **Opium**, gr. $\frac{1}{2}$; ten minutes later **Resorcin**, gr. iij; with **Trinitrin**, gr. $\frac{1}{100}$. If necessary, after 3 or 4 hours, he gives: ℞ Morphinæ, gr. $\frac{1}{2}$; Ext. Cannabis Ind., gr. $\frac{1}{4}$; Trinitrini, gr. $\frac{1}{100}$; Strychninæ Sulph., gr. $\frac{1}{60}$; Resorcini, gr. 1; Cocainæ Hydrochlor., gr. $\frac{1}{6}$, in a tablet. (*Vol.* 1901, *p.* 25)—**Chloretone**, in doses of gr. vj–xx, followed by a draught of milk or water, has also given relief.

SEBORRHŒA.

(*Vol.* 1905, *p.* 524)—Apply an ointment of **Precipitated Sulphur,** 2·5 per cent, in Lanolin and Vaselin equal parts. For scaliness add 1 to 2 per cent **Salicylic Acid**; for secondary pyogenic lesions add 1 to 2 per cent **Ammoniated Mercury. Sulphur Baths** are useful for widespread cases.

SEVEN-DAY FEVER.—(*See* DENGUE.)

SKIN DISEASES. (*See also Special Articles.*)

E. Graham Little, M.D., F.R.C.P.

DIAGNOSIS.—Brocq,[1] struck with the value of "Auspitz's sign" in psoriasis—the common test of removing, layer by layer, the scales of the psoriasic patch with the finger nail, until a smooth, shiny, red surface is exposed—has studied the results of a similar procedure in other dermatoses, and considers that it offers a valuable aid to diagnosis in many forms of disease. He has devised, in place of the finger-nail, which for many reasons is undesirable, a shallow-grooved curette. The manœuvre of removing the scales must be very slowly and cautiously performed, with close observation of the lesion at each stage of use of the curette. The method allows of the perception of the thickness of the scales; of their dryness, whiteness, lustre, and stratification, as in psoriasis; their yellowness, softness, and moisture, as in carcinoma or seborrhœic eczema of Unna; the degree of their adherence, and whether they dip into the orifices of the epidermis, as in lupus erythematosus. It allows also of detecting the degree of *serosity*: to the surface of the lesion after the scales have been removed, a small piece of thin blotting-paper is to be applied, and if this becomes wet, serosity is present. In the same manner minute intra-epidermic vesicles, invisible to the naked eye, may be detected by the blotting-paper test. The degree of facility with which hæmorrhage may be produced by light scratching of the surface denuded of scales is also to be tested; but in this case, as there are idiosyncrasies—some persons habitually bleeding more readily than others—the control experiment of scratching a healthy part of the surface as well as a lesion of the disease should be made. To sum up, the method permits of the observation of (1) The degree of congestion and serosity of the corium; (2) The presence of "histological" vesicles; (3) The degree of friability of the vessels.

By applying this procedure in the manner described, Brocq claims to have established the following criteria for diagnosis;—

In *Psoriasis*: (1) The presence of scales in successive strata; (2) The exposure of a thin membrane—the membrane of Bulkeley—detachable in flakes, and reposing on (3) A red, shiny, unequal surface, with some serous exudation; (4) Finally, with further scratching, the appearance of minute bleeding points. These facts have been recorded before, of course, but their confirmation by so keen an observer is interesting.

In "*Parapsoriasis*"—a subject at which Brocq has worked with special zeal — the scales are less adherent, less heaped up, more powdery; the red surface found on removing the scales is less red than in psoriasis, less smooth, and there is no "membrane." The punctiform hæmorrhages are not so readily obtained.

In Eczema Seborrhoicum the scales are thin, soft, little adherent, without lustre; punctiform hæmorrhages are produced with even greater facility than in the case of psoriasis, but the "membrane" and the shiny red surface are absent.

In *Pityriasis Rosea* there are fine, white, thin scales, not heaped up; on their removal with further scratching a fine purpuric network is often produced, but no actual bleeding as tested with blotting-paper, and there is never any detachable membrane. Occasionally, minute intra-epidermic vesicles seem to be found.

In *Pityriasis Rubra Pilaris*, although the cases examined have been too few to be conclusive, the scales appear to be even more adherent than in psoriasis, and to be more friable; purpura is more easily produced than punctiform hæmorrhages, though these occur, and there is no "membrane."

In the case of *Vesicular Eczema*, the presence of vesicles visible to the eye renders the diagnosis by scratching unnecessary; but in the so-called *Dry Eczemas*, it will be found occasionally that curetting reveals a simple purpura, without serosity; and such cases should be classed with parapsoriasis. In other cases, however, minute vesicles will be discovered, and these are instances of true eczema.

In *Lupus Erythematosus* the scales are detached with difficulty, and are thin, dry and very friable. They may be dislodged in flakes, on the under surface of which are prolongations, like stalactites, which enter the orifices of the skin. Further cautious curetting of the surface produces purpuric points, and coarser curetting will cause punctiform hæmorrhages.

In *Lichen Planus* curetting will sometimes remove fine, dry scales, at other times none. With further scratching, the papule reddens and swells and becomes more conspicuous, and finally purpuric spots appear. It is only when due care has not been used that hæmorrhage takes place.

In *Syphilitic Papulo-squamous lesions*, the typical feature is the early appearance of purpuric points on curetting; this must be done gently, as the lesion is very vascular, and hæmorrhage may show without the intervening purpuric stage, which, however, is very characteristic. Very similar results are obtained with *Lupus Vulgaris*.

Eosinophilia.—The presence of a disproportionate number of eosinophile or oxyphile or acidophile leucocytes (for all these terms are synonymous) in the blood and organs has been considered an important diagnostic feature in several diseases of the skin, notably in dermatitis herpetiformis. The value of this symptom has been questioned of late, and this careful study of the matter by Lams[2] is a welcome contribution to knowledge. The proportion of eosinophiles in the blood in health is a fairly constant one in adult life, and may be said to be 1 to 3 per cent. In children, however, the number is often higher; a physiological eosinophilia may be said to distinguish childhood, some authors considering that as high a ratio as 19 per cent may be normal in children. In old age, on the other hand, eosinophilia slightly diminishes. It would appear also that races differ in the degree of eosinophilia which may be present in health; the Chinese, according to Horder, have a normal ratio of 15 per cent. These variations necessitate much caution in ascribing to any given disease the appearance of this symptom; some observations, however, of apparent cause and effect are given. In scarlet fever several observers have noted eosinophiles to the degree of 13 to 23 per cent, this symptom persisting for many months after the disappearance of the eruption. Eosinophilia has similarly been observed in vaccinia (20 per cent), in typhoid fever (8 to 9 per cent), in acute rheumatism (5 to 20 per cent) in appendicitis (8 per cent), in leukæmia (10 to 80 per cent), in epithelioma, sarcoma, and lipomatosis, in varying degrees; in asthma (6 to 40 per cent), in leprosy (8 to 64 per cent), in malaria (9 to 37 per cent), and many other diseases. Eosinophilia in very high proportions occurs especially in the blood of patients who harbour animal parasites, such as hydatids, tænia, ankylostomes, trichinia, ascaris, oxyuris, filaria, guinea worm, bilharzia. The ingestion of toxic substances is also associated with a rise in the ratio of eosinophiles. This has been observed after the administration of tuberculin, antitoxic serums, camphor, alcohol, phosphorus, nuclein, salicylate of soda, benzene, picric acid, iodide of potassium, mercurials.

Lams[2] undertakes the examination of the literature bearing upon eosinophilia in pemphigus and dermatitis herpetiformis and allied bullous diseases, and the result of such an examination is to deprive this symptom of any diagnostic value whatever in differentiating these diseases; eosinophilia is common in bullous diseases, and that is all that the evidence will allow of saying. An increased ratio of eosinophiles has been found in the blood of patients the subjects of burns, but not locally in the blebs; eosinophiles, on the other hand, are found in increased ratio in the local lesions due to the application of blistering fluids, but not in the blood. It would seem, indeed, as though the leucocytic formula of all acute diseases underwent three stages: (1) Increase in polynuclears; (2) Increase in mononuclears; (3) Increase of eosinophiles in the stage of convalescence, and as though eosinophilia consequently were a symptom at some time or other of almost all diseases, but especially common in skin diseases and parasitic affections, notwithstanding that these diseases seldom produce general constitutional illness. As a means of differential diagnosis between diseases of the skin, no reliance is to be placed on this symptom. In general terms, eosinophilia marks a period of convalescence; and consequently the development of this condition in the course of disease is of good prognosis, its absence correspondingly unfavourable.

DIET.—Stelwagon[3] has a suggestive paper on the influence of diet in causing skin diseases. He considers the subject under the following headings:—

1. *Idiosyncrasy.*—Individuals react unfavourably with certain articles

of diet in a manner special to themselves: strawberries, and acid fruits generally, pork, veal, fish, oysters, amongst many other articles, may have their selective deleterious action.

2. *Direct Local Irritant Action.*—Acid fruits, tomatoes, peppery and other sauces, may produce irritable conditions of the mouth and lips.

3. *Diet engendering Nervous Excitement or Depression.*—Among these agents may be named tea, coffee, tobacco, alcohol; and the diseases in which these may play a part in causation are such as acne, eczema, rosacea, pruritus.

4. *Incompatible or Irrational Mixtures,* such as may be taken in a dinner of many courses: cream with raw or cooked fruits; butter and syrupy additions to cereals, etc.

5. *Under- and over-feeding.*—As an example of the former may be cited the various methods for reducing obesity, which are not infrequently attended by an outbreak of eczema. Over-feeding is certainly far more common, and is responsible for many cases of eczema in young children. The suppression of meat in the diet of eczemas, for example, is often very haphazard, and it would probably be better in many cases to restrict the starchy foods rather than red meats.

6. *Toxic Changes in Foods, due to Improper or Prolonged Keeping.*—Many of the toxic erythemata are due to this cause; cold storage, which enters increasingly into our methods of preserving food, is responsible, when imperfectly sustained, for many obscure ptomaine poisonings.

7. *Chemical Food-preservatives,* such as boric and salicylic acids, formaldehyde, etc., play their part in the cutaneous eruption due to ingesta.

Fox[4] also lays stress on the importance of forbidding over-eating in cutaneous diseases, and recommends the reduction of the body-weight as one of the first points to be aimed at in commencing the treatment of many inflammatory diseases of the skin, notably psoriasis. He gives the excellent advice, in laying down a dietary, to restrict the patient to a rigidly defined and simple diet, rather than to content oneself with forbidding a list of items. And the *manner* of eating must be investigated; too many patients take their food ill-cooked, or too hastily, or under the stress of excitement or worry. The methods of the athletic trainer might be copied with advantage by physicians, in the two details of insisting on exercise and the enforcing of the advice given, without being content with merely giving the advice.

Milk-diet in certain Diseases of the Skin.—Bulkeley[5] considers that the absorption of milk without caseation and consequent digestion is a process to be aimed at in many cases of disease of the skin and other organs, in which milk, as ordinarily taken, disagrees. Milk injected into veins has been found to be rapidly absorbed; and Bulkeley, taking this as an analogy, seeks a method by which this direct absorption may be imitated *per viam gastris.* The process of acid digestion in the stomach is succeeded by a period of quiescence, during which the juices in the stomach are alkaline (the "alkaline tide" of physiologists). It is at this moment that milk must be given, warmed to the body temperature, and definitely alkaline, as fresh milk always is ; the alkalinity may be assured by adding small quantities of sodium bicarbonate. Since the object aimed at is to elude gastric digestion, nothing that can start that process must be given with the milk, and cream and any solid matter must be removed. The best time for administration is an hour or half an hour before meals, which are spaced out so that complete digestion of the previous meal is secured before the taking of the milk. This method is especially valuable in severe acne, in malignant syphilis, in severe eczema, and in psoriasis. It is wise to let the patient lie down for an hour before the meal to allow of the readier absorption of the milk.

REFERENCES.—[1]*Ann. de Derm. et de Syph.* May, 1907 ; [2]*Rev. de Méd.* June 10, 1907 ; [3]*Jour. Cutan. Dis.* April, 1907, p. 147 ; [4]*Ibid.* p. 152 ; [5]*Brit. Med. Jour.* Oct. 6, 1906.

SMALL-POX.

E. W. Goodall, M.D.

A brief account of his experience of the **Red Light** treatment of small-pox is given by Herbert Peck,[1] Chesterfield. From 1902 to 1905 he treated 244 cases in this way, with six deaths, a mortality of 2·4 per cent. The figures for the same period for Derbyshire (without the cases treated with red light), Cheshire, Lancashire, Liverpool, and Manchester, are given for comparison ; the case-mortalities are as follows : 6·0, 6·4, 5·8, 2·7, and 5·6. We hardly think that the author proves his case by the statistics. The Liverpool figures are quite as good as those of the red-light cases, namely, 2322 cases with sixty-three deaths, 2·7 per cent.

REFERENCE.—[1]*Public Health*, Feb. 1907.

SNAKE-BITE.

(*Vol.* 1905, *p.* 49)—**Potassium Permanganate** should be used, with **Ligature** of the wounded limb. Crystals may be rubbed into the puncture till the surrounding tissues are blackened ; or a 1 per cent solution may be injected locally, as well as into a neighbouring vein. (*Vol.* 1902, *p.* 534)—Macfarland advises ligature of the limb proximal to the bite, incision and suction of the wound, **Calcium Chloride,** 10 per cent aqueous solution, injected by three to six drops at a time into a dozen spots round the wound, **Strychnine** hypodermically, and immediate and frequently repeated injection of **Calmette's Antivenene,** 10 to 20 c.c., under the skin.

SPERMATIC CORD, CELLULITIS OF.

Priestley Leech, M.D., F.R.C.S.

Cole Madden[1] describes a series of cases of this affection. The symptoms closely resemble those of strangulated hernia, and in two of the cases the patients said they had suffered for years from a hernia, which with the onset of the symptoms apparently became swollen and irreducible, and in both instances an empty hernial sac in the centre of the swollen inflamed tissues was demonstrated. The patient usually complains of severe pain in the scrotum and around the lower part of the abdomen, with constipation and some vomiting, which is not usually a prominent symptom, and is generally seen only at the onset. The temperature is raised, and the general condition is bad. The side of the scrotum appears to be filled with a large rounded swelling, which runs right into the region of the external ring ; in fact there are all the appearances of an irreducible inguinal hernia. The swelling, hard and doughy on firm pressure, cannot be reduced. There is no impulse on coughing, and the whole mass is dull on percussion. It is impossible to say whether we have to do with a strangulated hernia or not, and in any case immediate operation is necessary. On incision the skin is œdematous, and several layers of thickened infiltrated œdematous structures are divided, but no gut is discovered, nor even clear fluid in a sac; a thick cord is found, which on removal is seen to consist of the much infiltrated spermatic cord, the veins of which are thrombosed and filled with purulent clot, while the rest of the structure is thickly studded with small abscesses, or rather collections of pus scattered throughout a kind of spongy tissue. The testicles are not affected as a rule, though their function must be abolished by the block, and they are generally removed. The gutter left is packed with gauze, and the patients usually recover after some septic fever, etc. One fatal case was seen in which death was due to septic absorption, owing probably to extension of the suppurative process along the retroperitoneal tissues, with a diffuse septic cellulitis in this situation. No cause has been found for this condition.

[The Editor operated on a similar case some years ago, but no suppuration was found: only an intensely inflamed cord; recovery took place. The case had been admitted as a strangulated hernia.]

REFERENCE.—[1]*Lancet*, Feb. 23, 1907.

SPERMATORRHŒA.

(*Vol.* 1888, *pp.* 45, 66)—Tincture of **Cypripedium**, in doses of 5 to 15 minims, is recommended; also **Ichthyol**, either as such, or in the form of ammonium or sodium sulph-ichthyolate (grs. ij to iv). (*Vol.* 1887, *p.* 355)—Prescribe **Cold Sitz Baths** with the **Spinal Douche**, **Phosphorus**, and, in cases of general nervous weakness, small doses of **Strychnine**. A useful pill is one, containing Ext. Belladonnæ, gr. ¼; Zinci Sulphat., gr. iss; one thrice daily. For patients with cold hands and feet, and frequent emissions associated with feeble erections, prescribe: ℞ Potassii Bromidi, ℥j; Inf. Digitalis, ℥viij; a teaspoonful to be taken night and morning for one week.

SPINAL ANÆSTHESIA.

K. W. Monsarrat, F.R.C.S.

The idea of producing anæsthesia by making injections into the spinal subarachnoid space was originally mooted by the American neurologist Corning, but was first put into practice by Bier. He used cocaine on eight occasions in the human subject, but discontinued the method owing to its dangers. Others who followed Bier were unable to report more favourably, and during the three or four years subsequent to its introduction, spinal anæsthesia by cocaine injection was attended by many serious accidents and a high percentage mortality. Of late, however, improvements in technique and the use of drugs similar in effect to cocaine, but without some of its toxic properties, have led many surgeons and gynæcologists to test anew the value of the method. Although some time must elapse before the indications for its use can be strictly laid down, yet a large amount of recorded experience is already available for study, and this is for the most part favourable in character.

TECHNIQUE.—Bier's syringe consists of a glass barrel with metal plunger, capable of holding 10 cc. The needle is from 8 to 10 cm. in length and 1 mm. in thickness, and has a closely fitting stilet. Modifications of this syringe have been devised by Barker,[1] Tomaschewski,[2] and others. Barker's modification consists in the provision of a slender cannula which fits on to the nozzle of the syringe, and is introduced through the hollow needle after the latter has been inserted into the subarachnoid space. This cannula projects about 1 mm. beyond the end of the needle when it is in position, and by this means the injection of the whole of the syringe contents into the subarachnoid space is insured. The feature of Tomaschewski's instrument is the connection of a 10 cc. syringe laterally with the lumen of the hollow needle. Into this the cerebrospinal fluid passes in measured amount, and an equal amount of anæsthetic solution is injected, or the drug is dissolved in the syringe in the withdrawn cerebrospinal fluid.

The drugs used are dispensed either in solution or in solid form. It is necessary that the sterility of the injected fluid should be absolutely above suspicion. Solutions are put up after sterilization in sterilized sealed glass capsules ; if obtained in tablets or powder the drug must be sterilized before solution, and this may be done by placing it in a petri dish and submitting it to a temperature of 70° C. for an hour on three successive days. Some chemists add unsterilized crystals to the sterilized water or saline solution, and issue the solution as sterilized. Such solutions should not be used. Either the solution as a whole must be sterilized or the several ingredients must each be sterilized before admixture. Solutions require great care in sterilization if decomposition is to be avoided, and fractional sterilization is the method best suited. The injections containing suprarenal products are particularly difficult of sterilization without decomposition. Tablets or powder may be dissolved in the cerebrospinal fluid which is withdrawn, but this plan takes a considerable amount of extra time, and it is at present not clear that it has corresponding advantages.

For the injection the patient is placed either in the sitting posture and leaning forwards, or lying on the side with the limbs and head ventrally flexed. Barker[3] has employed a prone position in some cases, with a hard pillow under the umbilicus. The fourth lumbar spine is then defined, corresponding in level with the highest points of the iliac crests. The space above this spine is the one usually chosen. The lumbar area has been already prepared as for operation, and it is again cleaned with an alcoholic mercurial solution, which is then washed off with sterile water. The needle is taken in the gloved right hand and entered in the middle line. It is pushed steadily forward and slightly upward. At first there is considerable resistence during the passage through the supraspinous and interspinous ligaments ; when these are passed the stilet is withdrawn, and the needle is slowly and steadily pushed onwards until cerebrospinal fluid begins to flow. This flow is permitted until an amount not exceeding 10 cc. has escaped, and then the contents of the syringe are slowly injected.

Bier's[4] present practice is to dilute 1 cc. of the anæsthetic solution with 8 to 10 cc. of cerebrospinal fluid in the syringe, and then to inject the whole. It is claimed that a more extensive anæsthesia is obtained in this way.

After the injection the patient lies on his back. In order to promote upward passage of the injected fluid it is the invariable practice of some surgeons to elevate the pelvis to a greater or less degree. In a paper of considerable interest Donitz,[5] assistant in Bier's clinic, discusses the conditions which influence the height of the anæsthesia. He points out that the area anæsthetized is smallest if the injection is made with the patient lying and remaining on his back; that it is greater if the patient receives the injection sitting, and then lies horizontally, and greater still if, after injection in the sitting posture, the pelvis is raised. These variations depend upon displacement in the column of cerebrospinal fluid. A lowering of the intracranial blood-pressure also favours the passage of cerebrospinal fluid skullwards. This can be produced by applying a constricting bandage to the neck, and removing it after the injection; and it can also be promoted by a forcible inspiration on the part of the patient. The same displacement upwards of the anæsthetic-containing column can be produced by the injection of large amounts of fluid. Without altering the dose of the drug a higher anæsthesia is produced by the injection of dilute solutions. The method recommended by Donitz is the injection of 1 cc. of a 5 per cent solution of **Tropacocaine** diluted with from 2 to 10 cc. of cerebrospinal fluid according to the height of the anæsthesia desired. Bier is particularly emphatic that injection should never be made before cerebrospinal fluid comes readily through the needle in drops or stream. If the fluid does not flow well after trying the effect of turning or slight withdrawal of the needle, then the puncture should be repeated in the space above or below.

Barker has made a study of the behaviour of fluids of different density after injection. As a result he has employed, in the last fifty of the cases he records, a solution of the following composition: **Stovaine** 10 per cent, glucose 5 per cent, distilled water 85 per cent. In this series of cases he had no failures, the results were remarkably uniform as to the height of the anæsthesia, and no general anæsthetic had to be employed in a single case. Where a high anæsthesia is desired he prefers to perform the puncture with the patient lying on the side rather than in the sitting posture.

Hofmann[6] writes on the question of dosage, and claims that good results can be obtained with much smaller doses than those used by some, with a corresponding diminution in objectionable after-effects. He never elevates the pelvis after injection, and with a dose of 5 to 7 cgrams of **Novocaine** has found the analgesic zone to reach the navel and the costal border. He advocates a preliminary incision through the skin and supraspinous ligament with a fine knife; but this addition to the technique is considered unnecessary by most of those whose experience is large.

Clinical Reports.—Slajmer[7] records observations on 1200 cases in which he has employed the method. In fifty-four of these the anæsthesia was incomplete owing to some fault in technique. Occasionally there was spontaneous evacuation of stools during the anæsthesia, an occurrence reported by others. There were no fatalities in the series which could be ascribed to the method. In one case only was there a serious complication, an epileptic seizure being precipitated by the injection. In two instances the patients were twelve years old, in one fourteen ; all the remainder were over fifteen. Slajmer prefers **Tropacocaine** dissolved in 0·6 per cent saline solution, the amount used for operations below Poupart's ligament being 4 cgrams, for operations above this level 7 cgrams.

Hofmeier[8] has used **Stovaine Solution** (stovaine 40 mgrams, epirenin borate ·13 mgram, sodium chloride 1·1 mgram, aqua 1 cc.) in over a hundred cases, sixty of which were laparotomies. Complete anæsthesia was obtained in fifty-nine, in some of which the operation lasted from an hour to an hour and a half ; an almost complete anæsthesia in thirteen, with pain on stretching the peritoneum or towards the end of the operation ; in seventeen the anæsthesia was less satisfactory, and four were failures. He notes as a great advantage the complete relaxation of the abdominal parietes. In seventeen cases there were retching and vomiting, and in eight of these it was very severe. Headache was also common, and sometimes very persistent. Paralyses sometimes occurred, particularly of the third and sixth nerves, but all disappeared completely. Generally speaking there were no dangerous symptoms ; but in one corpulent patient artificial respiration was necessary.

Pforte,[9] working with **Stovaine**, praises its use in gynæcological work. Failures he considers due to faults in technique. The statistics he records are not, however, very encouraging. In 61 per cent the anæsthesia was "excellent," 19 per cent were failures entirely. Vomiting was frequent, pallor and sweating were often noticed, and four times there was collapse, but only once was it severe. There were no persistent ill-effects in any case.

Hauber[10] reports fourteen failures in 200 cases. He employed **Tropacocaine** for operations above the navel, **Stovaine** for operations below. He considers the method unsuitable for young or nervous subjects, for extensive intraperitoneal operations, and for simple examinations.

In Barker's cases, using stovaine, the duration of the anæsthesia varied between twenty-three minutes and a couple of hours. Among his hundred cases there were no deaths connected with the method. Rather bad headache occurred once or twice, and in some cases nausea and vomiting, but neither seem to have reached the degree described by others. Pringle[11] has also used stovaine, and reports his experience in 100 cases. There was retching or vomiting in a few, nearly always slight, but four had attacks of syncope associated with the vomiting. In no case was there any real anxiety. One death occurred on the table, but in his opinion the stovaine was not responsible. Among the hundred cases there were twenty-two in which the analgesia was insufficient to allow the operation to be completed. Fifteen of these were failures entirely.

Henking[12] records the experience in 160 cases with **Novocaine** in Küster's clinic at Marburg. A 5 per cent solution was employed at first in doses of 1 cc. to 2·25 cc.; but latterly 1·5 cc. was never exceeded, and this was found sufficient for laparotomy. The pelvis was raised after injection. There was only one complete failure, and no mortality; nor were there any dangerous symptoms during the anæsthesia. The patients often became pale, and the pulse small and quick. In one case of resection of the hip there was serious collapse, which passed off under treatment, and Henking does not think that the anæsthetic was responsible for these symptoms. Vomiting occurred in fourteen cases; in twenty-three there was headache, in some slight, in others severe. In two cases of persistent headache a lumbar puncture was done, and some cerebrospinal fluid drawn off with good effect. In one case there were signs of an aseptic meningitis for four days, and in one an abducens paralysis, which disappeared in three weeks. In two cases there were incontinence of urine and fæces, disappearing in eight and ten days respectively, and in another paresis of the left leg, which recovered in five days. This list of complications is somewhat lengthy, and hardly supports the writer's advocacy of novocaine injection as the routine method of anæsthesia for operations below Poupart. He considers novocaine superior to stovaine in the absence of serious ill effects, particularly in relation to the respiratory centre.

Schwarz'[13] report on the use of tropacocaine in 1000 cases is very valuable. In every case analgesia was obtained. The drug was dissolved in cerebrospinal fluid, and a maximum dose of 6 cgrams was not exceeded. In five cases (·5 per cent) there was some collapse, with cyanosis and a small pulse, but all recovered. He considers that the method is indicated for all operations below the navel. It should not be used for operations which could be done under infiltration anæsthesia, and is contra-indicated in children under fourteen and in highly nervous adults. In cases where the pulse is of low tension and rapid, such as strangulated herniæ several days old, and for patients who are suffering from the effects of severe hæmorrhage, it is of very doubtful utility.

Tilmann[14] has used stovaine in doses of from 4 to 6 cgrams; he has not elevated the pelvis, and has used the method only for operations below the umbilicus. In 50 per cent of his cases there was headache afterwards, but there were no serious after-effects. In his later cases he has substituted tropacocaine with adrenalin for the stovaine. He concludes that owing to the difficulties of complete asepsis, spinal anæsthesia will not become a routine method for all cases, but that it is extremely valuable when for some reason a general anæsthetic is contra-indicated.

COMPLICATIONS.—Some of the complications met with have already been incidentally mentioned; special reference to these is made by some writers.

Hohmeier[15] writes on several cases in Prof. König's clinic in which serious effects followed stovaine injection. The first was that of a man aged 35, operated on for fracture of the patella after the injection of 6 cgrams of stovaine. Paraplegia followed, and death in three months. This case has also been reported by Prof. König himself, and was noticed in the *Lancet* (Jan. 5, 1907) and elsewhere. The only exceptional circumstance in the technique was that the injection was made after the evacuation of a small quantity of *bloodstained* fluid. At the necropsy the spinal cord was diffluent, but there was no evidence of infection. In a second case injection of the same amount of stovaine was followed by severe spinal meningitis lasting for fourteen days; no organisms were found in the cerebrospinal fluid during the attack. In two other cases there was severe recurrent hæmorrhage from the wounds, ascribed to the vasodilator action of the stovaine. Another case was that of a diabetic who received the same dose and who suffered from persistent vomiting for four days, the digestive tract not recovering for eleven days.

Freund[16] has reported a fatal case eight minutes after stovaine injection; vomiting and sudden cessation of respiration were the prominent symptoms. In about a fourth of the 200 cases in his list there were some objectionable symptoms, usually slight: retching, slight syncope, occasionally headache, and moderate rise of temperature. It should be remarked that he employs somewhat larger doses than those recommended by Bier.

Trautenroth[17] records a case of *spinal meningitis* after stovaine. The patient was a woman aged 39, in labour. Soon after the injection there appeared cyanosis, heart failure, shallow respiration, vomiting, headache, and cramp-like pains in the neck and right arm. Fourteen days later symptoms of local spinal meningitis set in, and these persisted for several months. The meningitis was not septic, but apparently due to chemical irritation.

Heinecke and Läwen[18] report on a series of seventy cases, from which all were excluded in which the complications could be ascribed to errors of technique or to diseases from which the patients were suffering. Immediate complications (nausea, vomiting, and cardiac depression) were two and a half times more frequent after novocaine than after stovaine. As to late effects in particular—headache, pains in the neck, and vomiting—there did not appear to be much difference between the two drugs, except that these effects were on the whole more intense after novocaine than after stovaine. The writers consider that novocaine is a more dangerous drug than stovaine, and they also think that the addition of **Suprarenal Extract** is of great importance and advantage.

A complication which has been recorded in quite a number of cases is temporary *paralysis* of the sixth, and, more rarely, of the third cranial nerves. These paralyses are discussed by Ach,[19] and he relates four new cases of abducens paralysis. They have most commonly followed the use of stovaine, but have also occurred after novocaine and alypin. On the basis of these observations he recommends tropacocaine rather than stovaine, and the use of small doses and dilute solutions, and also that the head and shoulders should be elevated, at any rate after the operation.

A. Schwarz[20] writes on a complication hitherto undescribed. Sixty patients with healthy kidneys were operated on for various complaints after intraspinal injection of 4 cgrams of stovaine. Forty-seven of these showed changes in the urine indicative of *nephritis*. In twenty-eight the nephritis was very slight in degree; in fifteen the casts were numerous and the albumin abundant; and in the remaining four the nephritis was of a severe type, and persisted from fourteen to twenty-eight days. The disease was not permanent in any case, the average duration being six and a half days.

An unfavourable result after novocaine is reported by Goldmann.[21] The solution used was 2 cc. of novocaine-suprarenin. The patient, who was 52 years of age, showed a moderate degree of arteriosclerosis, but was otherwise healthy. Severe pains came on after the injection in the neck, back, upper limbs, and especially in the heels. *Gangrene* of the skin of both heels followed, and the resulting wounds took a long time to heal.

Meyer[22] records a case of *collapse* in a man aged 77 after the injection of 5 cgrams of tropacocaine in 8 cc. of cerebrospinal fluid. The operation was for strangulated hernia, and the pelvis was elevated.

The Drugs Employed.—In considering the clinical reports and the records of complications, several questions arise which require further investigation and discussion. Firstly there is the question whether any of the drugs which have been employed have shown marked superiority over the others in effectiveness and absence of ill-effects. Bier upholds the superiority of **Tropacocaine** in both respects. Kümmel,[23] whose experience extends to about 700 cases, has used **Stovaine, Novocaine, Alypin,** and **Tropacocaine.** He prefers the last, with the addition of **Suprarenin**; he considers that it is less toxic than the others, and produces fewer ill-effects immediate or late. H. Meyer[24] compares the same four drugs. He states that in the experience of the Leipzig surgical clinic the use of novocaine is somewhat dangerous, and that alypin is no better in this respect. Further, that stovaine is often followed by distressing after-effects, and that of the four tropacocaine is certainly the best. Baisch,[25] in reporting on thirty cases in the Heidelberg clinic, compares stovaine, alypin, and novocaine. The last was soon given up owing to the high percentage of complications, and stovaine was preferred to both of the others because of the comparative absence of ill effects.

The advantages of tropacocaine over stovaine are summarized by Donitz[26] as follows: (1) It has less effect on the respiratory centre; (2) Paralysis of the eye muscles is less common; (3) Complications are fewer, vomiting especially being quite uncommon; (4) There is less muscular paralysis. Most other writers who have had experience of several of these drugs express themselves in favour of tropacocaine, particularly as regards its innocuity. Some, on the other hand, have found the anæsthesia less complete than with stovaine and novocaine, though this is not borne out by Bier, Schwarz, and others who have used tropacocaine very largely.

A second question is that of individual susceptibility to toxic effects. It is impossible at present to form any but the most general conclusions on this matter, complicated as it is by another : the instability of the drugs at present employed. No one who has had experience of even a few dozen cases, can fail to have been struck by the inequality of the results obtained. To take an extreme example, it is not a unique experience, and it is one which the present writer has shared, to have two consecutive cases, injected with the same syringe, in the same intervertebral space, after the escape of the same amount of cerebrospinal fluid in equally good stream, and with the same dose, and yet in the one case to obtain a completely satisfactory anæsthesia, and in the other no ascertainable anæsthesia at all ! The question of instability is one which requires careful investigation. The most uniform series of results is that reported by Schwarz, by the injection of tropacocaine dissolved immediately in cerebrospinal fluid ; and the results obtained by Bier, with a solution of the same drug in simple sterilized water, are almost equally good. The evidence at hand seems to point to the advisability of solution immediately before use, and in a simple medium (e.g., distilled sterilized water), without admixture with sodium chloride or any other chemical substance. The large proportion of unsatisfactory results reported by some writers as compared with others does not appear to be explainable on the theory of individual susceptibilities ; rather it points to the instability of these drugs in certain solutions, and further that, as a result of breaking down, by-products are formed which possess markedly toxic properties.

Experimental Observations.—Some interesting researches have been recorded by Heinecke and Läwen[27] on the question as to whether toxic effects are due to the action of the drug after absorption, or to a direct effect on the nerve centres. The experiments were done on rabbits, and the results showed that direct contact with the nerve centres, and not absorption through the circulation, was responsible for the toxic phenomena. Cocaine and novocaine were the drugs investigated, and there appeared to be little difference between the two in toxicity. The toxic dose of the former was 0·03 per kilo. of rabbit, that of the latter was 0·02. Falkner[28] has examined the spinal cord in serial sections in the case of eight rabbits, to each of which ½ cgram of tropacocaine was given subdurally. In two the brain also was examined. The animals were killed at different periods. The results were entirely negative, neither recent nor old degenerations being discovered.

The investigations of Van Lier[29] form an interesting contrast, as stovaine was the drug used. The cord, medulla, posterior ganglia, and peripheral nerves were examined, and the animals were killed six, twelve, and twenty-four hours after injection. Constant changes were found in the cord, consisting of hydroptic swelling of the ganglion cells, destruction of Nissl bodies, and abnormal staining of nuclei. At a point 2 cm. above the injection level, these changes were marked, 15 cm. above they were found in a few cells only, and they were absent in the medulla. Some animals died from respiratory paralysis, and in these instances changes similar to the above were found in the medulla. Twenty-four hours after the injections there were no changes to be found. Van Lier holds that the degenerations found, being of a fugitive character, are in no sense a contra-indication to the use of stovaine.

Contra-indications.—The following list of contra-indications is one on which there is a general unanimity: (1) Recent or ineffectually treated syphilis; (2) Fever of unknown cause; (3) Septic infection; (4) Diseases of the central nervous system; (5) Hysteria; (6) Childhood. In cases of septic infection there is a risk that the slight trauma of the injection may lead to a local outbreak of the infection. In diseases of the central nervous system the method should be used with caution, and only if some other pathological state is present which contra-indicates a general anæsthetic. In hysterical subjects the disadvantages of the method are obvious, and the best authorities advise against its use in patients under the age of fifteen.

References.—[1]*Brit. Med. Jour.* Mar. 1, 1907; [2]*Zentr. f. Chir.* July 20, 1907; [3]*Loc. cit.*; [4]*Med. Klin.* 1906, p. 1120; [5]*Münch. med. Woch.* Nov. 27. 1906; [6]*Ibid.* Dec. 25, 1906; [7]*Wien. med. Presse*, 1906, Nos. 22 and 23; [8]*Münch. med. Woch.* Feb. 5, 1907; [9]*Zentr. f. Gyn.* 1906, No. 50; [10]*V. Langenbeck's Archiv.* Bd. lxxxi. H. 2; [11]*Brit. Med. Jour.* July 6, 1907; [12]*Münch. med. Woch.* 1907, No. 50; [13]*Wien. klin. Woch.* No. 30, 1906; [14]*Münch. med. Woch.* Oct. 30, 1906; [15]*Deut. Zeits. f. Chir.* Bd. lxxxiv. p. 29; [16]*Deut. med. Woch.* 1906, No. 28; [18]*Ibid.* 1906, No. 7; [17]*Beitr. z. klin. Chir.* Bd. l. H. 2; [19]*Münch. med. Woch.* Mar. 26, 1907; [20]*Zentr. f. Chir.* 1907, No. 13 and 23; [21]*Ibid.* 1907, No. 2; [22]*Med. Klin.* 1907, No. 7; [23]*Zentr. f. Chir.* 1907, No. 1; [24]*Med. Klin.* 1907, p. 175; [25]*Beitr. z. klin. Chir.* Bd. lii. p. 236; [26]*Loc. cit.*; [27]*V. Langenbeck's Archiv.* Bd. lxxxi. H. 1; [28]*Zentr. f. Gyn.* 1907, No. 3; [29]*Beitr. z. klin. Chir.* Bd. liii. p. 413.

SPINAL PARALYSIS, EPIDEMIC.

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Since the publication of the *Annual* of 1907 there has occurred in the north-eastern part of the United States an epidemic of anterior poliomyelitis which far exceeds numerically any invasion of this disease previously reported. Although the literature of the epidemic is only beginning to appear, and it is therefore too early to secure exact figures, it is probable that 2,000 is a conservative estimate of the number of cases that have occurred in Pennsylvania, New Jersey, New York, Connecticutt and Massachusetts during the last six months of 1907. Fortunately there is good reason to expect that through the efforts of the committee appointed in New York City[1] for the investigation of the epidemic, the medical profession will receive later a report that will add greatly to our knowledge of this peculiar infection. In the meantime it is not too early to review some of the opinions and conclusions that have already been presented at various medical meetings by the men who have been seeing the cases in large numbers, and to compare their findings with those of previous investigators.

Etiology.—A considerable amount of work, as yet unreported, has been done in various laboratories in New York in a search for the etiological factor, but the results are practically negative. With few exceptions no organisms have been found in the blood or spinal fluid. In one or two instances cocci have been found in cultures from the latter, but they were very few in number and they did not coincide with the organism described by Giersvold.[2] In one instance some investigations of the opsonic index of the isolated coccus were suggestive but not definite. Although the general opinion at the early stages of the epidemic seemed to be that a specific organism existed in the blood or spinal fluid, the contrary belief that the disease is caused by a toxin elaborated in the intestinal tract has certainly gained much ground among careful observers. The experimental work of Shiga[3] with the toxins of the Shiga bacillus strengthens this theory, which is also in accord with the fact that in a large majority of cases the first symptoms are found in the intestinal tract. On the other hand, most acute infections in children are ushered in with digestive disturbances, and the claim is made by some pathologists that we have no example of a true inflammatory process being produced by a toxin absorbed from the intestine.

The bacteriological findings of Harbitz and Scheel,[4] of Christiania, are also chiefly negative, although in three cases they found an organism similar to that described by Giersvold. Their attempts at culture were unsuccessful, and the coccus was not found in sections of the cord or membranes. They call attention to the fact that the Weichselbaum coccus is also very difficult to demonstrate. In spite of their findings these investigators are of the opinion that the disease is due to a specific organism infesting the cord, the meninges, and the spinal fluid.

Contagiousness and Mode of Infection.—Practically all Scandinavian observers and many in the United States have concluded that the disease is contagious. In Norway it is on the notifiable list. Of the one hundred cases referred to later, three occurred in one family, and in two instances two were in one house; that is, direct contagion is suggested in 4 per cent—certainly not very conclusive evidence. Moreover, in the three cases in one family the fact that all three occurred within a few days indicates a common infection rather than successive transmission. In the scattered cases in the country districts it has been impossible to explain the infection along any known lines.

In reporting previous epidemics, both Caverly[5] and Medin[6] have noted the fact that they occurred during unusually dry summers. This was also true of the season just passed in New York, and if it bears any real relation to the source of the infection in a large well-sewered city, it would certainly suggest the water supply as the carrier. Other observers have also noted a possible relation between running water and the infection. Terriberry[7] made a careful investigation of the topography of Ridgway, Penn., which was one of the earliest points infected. He found that the infection had travelled along the line of a dirty sluggish stream for about thirty miles in the course of a few weeks. This stream was not used for drinking purposes. Some observers have thought that more cases occurred along the water front of New York City than in the interior, but a careful mapping of all cases thus far collected in the Borough of Brooklyn does not substantiate this view. If this were true, an investigation made a year ago by the Department of Health in the study of typhoid might have a bearing on the subject. This investigation showed that flies are much more numerous along the water-front than in the interior of the city. In considering the water-supply, the fact must be remembered that the disease is occasionally noted in nursing children ; the youngest in the series referred to later was three weeks old.

Careful inquiry among farmers and veterinarians has failed to reveal any infection among domestic animals as reported by Caverly.[5]

Pathology.—Previous to Goldscheider's[8] report in 1892, the pathological changes were not clearly understood. Since that year his investigations have been supplemented by the work of several other observers. During the years 1903-1906, Harbitz and Scheel, at the Pathologic-Anatomic Institute of Christiania, have been studying the material from nineteen necropsies : thirteen in the acute stage, four in the stage of repair, and two cases of acute encephalitis apparently due to the same cause as the poliomyelitis. Although their report verifies in a general way the findings of Goldscheider and others, it shows that the acute inflammatory process is much more extensive than we had been led to suppose. In fact it tends to confirm the earlier clinical teaching of Strumpell in regard to the common relation between myelitis, encephalitis, meningitis, and neuritis. During the New York epidemic this question was discussed from the clinical standpoint by Ager,[9] Collins,[10] and others. The pathological findings of Harbitz and Scheel may be summarized as follows: There was no indication in the liver, spleen, etc., of any general systemic infection. In the spinal cord there was a diffuse inflammatory process closely related to the blood-vessels, and most intense in the anterior horn of the grey matter. Nevertheless inflammation was also present in the white matter and in the pia, often extending in the pia the full length of the cord. There was a diffuse cellular infiltration accompanying the degeneration of the ganglion cells, and the inflammation was much more extensive than was indicated by the macroscopical appearance or by the muscular involvement. Frequently the pia was affected over a considerable portion of the brain. From a careful study of the relation between the inflammation in the pia and that in various parts of the cord and brain, they were convinced that the meninges and the spinal fluid are the seat of the primary infection.

Age and Sex.—Investigations show that the same conditions as to age and sex prevail in this epidemic as in those previously reported.

Caverly reported thirty males and twenty-two females. His statistics are not very concise, but he apparently saw more cases in adults than are usually reported. Collins,[10] of the New York Hospital for ruptured and crippled, reports 121 males and 66 females. Of those: 4 were under one year, 67 between one and two years, 48 between two and three, 25 between three and four, 16 between four and five, 9 between five and six, 4 between six and ten, 3 eleven, and 6 not stated.

Taking the first hundred on the author's list of cases in the Borough of Brooklyn, the figures are as follows: male 65, female 35. Age: 7 under one year; 32 between one and two; 20 between two and three; 18 between three and four; 11 between four and five; 2, five; 4, six; 2, seven; 1, eight; 2, ten; 1, twenty.

Symptoms and Diagnosis.—In spite of the fact that in many mild cases the paralysis is the first symptom noted by the parents, it is reasonable to suppose that this must have been preceded by some rise in temperature. Clinicians who believe that the primary seat of the infection is in the digestive tract, contend that under intelligent observation some slight digestive disturbance will be discovered in every case. Whether this is primary or reflex is a much discussed question. During the present epidemic, constipation has been frequently noted as a prodromal or very early symptom—in some cases as severe as in meningitis. The height and duration of the temperature vary greatly, and they are not a measure of the cord involvement. The length of the preparalytic febrile period also varies from a few hours to several days. In some instances there is a history of a gastro-enteric disturbance one or two weeks before the paralysis, with a period of normal health intervening. Convulsions have occurred in small children, but less frequently than in previous epidemics. Coma has been present in a few cases that showed definite symptoms of meningeal involvement.

During this epidemic probably nothing has done more to confuse the general practitioner than the statement in the text-books that pain is not a symptom of this disease. As a matter of fact nearly all cases have shown more or less pain and tenderness, and in many instances these have been so severe as to require the administration of some form of opium. These symptoms are, however, in the muscles, not in the nerve trunks; that is, we are not dealing with a multiple neuritis.

As soon as we have added to such a group of symptoms a flaccid paralysis the diagnosis is apparent, but during the few days that often intervene the case may be mistaken for meningitis, neuritis, encephalitis, or a simple enteritis. As a matter of fact many of the milder cases have not been recognized, and the diagnosis has been "ptomaine poisoning with muscular wasting." The extent and location of the paralysis of course vary greatly, and in general the relative frequency of the various groups of muscles has been as stated in previous epidemics. But the number of cases in which the face and eyes have been affected has been large. Collins[10] and others have noted that in the cases of very general paralysis, unless they are early fatal from bulbar involvement, the recovery is apt to be very rapid and complete; while in the cases in which the paralysis was more circumscribed, there was not as much improvement. In the light of the newer pathology these confusing symptoms are readily understood as depending in each case upon the relative involvement at different levels of the pia, the grey matter, or the nerve roots.

Several observers claim to have seen abortive cases and to have made a diagnosis before the paralysis developed. This is possible during an epidemic, but certainly not at other times.

PROGNOSIS.—Among the men who have observed large groups of cases during the epidemic, opinions are divided in regard to the conclusions that should be drawn from the excellent results obtained. While all agree that the response to careful, methodical treatment has been good in all cases and remarkable in some, the more conservative men are inclined to attribute the results to the mild character of the infection rather than to any improvement in the method of treatment. The more optimistic view is being strengthened by the condition of the mild neglected cases that are now beginning to appear in our clinics. They certainly show as serious a state of muscular contraction and degeneration as we have been accustomed to see in the sporadic cases of previous years. It is undoubtedly true that the prognosis is better in this, as in other chronic conditions, when a considerable group of cases is under treatment simultaneously.

TREATMENT.—The discussion of the treatment naturally divides itself under two heads: (1) Of the acute stage; (2) The after-treatment.

1. *Of the Acute Stage.*—As one result of the study of a large number of cases, opinion is practically unanimous that absolute **Rest** is of the utmost importance during the acute inflammatory stage, as determined by the existence of fever, pain, and tenderness. The length of this period varies widely, but it averages about two weeks. Some of the more severe cases may require from five to ten weeks in bed. Absolute rest, however, should not be understood to mean absence of treatment, for it is during this early stage that much can be done to prevent many of the distressing after-effects of the disease. If we are fortunate enough to see these cases in the preparalytic febrile stage, and to suspect the nature of the infection, the extent and severity of the paralysis can certainly be modified.

Whether or not the intestinal tract is the primary seat of the infection, free purgation with **Calomel** or **Castor Oil** should be the first measure, followed by **High Colon Irrigation** (Clark).[7] The next step should be to prevent or relieve the congestion of the cord by counter-irritation, and by keeping the patient on his side. **Chloroform** applied upon a long strip of absorbent cotton, and a properly constructed back-rest, should be used for this purpose. This treatment should be continued, until all danger of the further extension of the cord inflammation has passed, remembering that relapses may occur. In using any form of counter-irritation the danger of bed-sores must not be forgotten. For the relief of the severe muscular pain and tenderness in the partially paralysed muscles, chloroform locally and very gentle **Massage** should be tried, but their use must be governed by the relief afforded. In many cases **Codeine,** or possibly **Morphine,** will be required during this period. If the pain is not severe, but there is a high degree of nervousness, the **Bromides** may be useful—the strontium salts being the least irritating to the digestive tract.

If circumstances permit, warm or hot **Immersion Baths** should be employed from the first, and continued throughout the course of the disease. They are valuable in several ways: for their soothing effect upon the nervous system, for their stimulating effect upon the secretory organs, and later for floating effect upon the paralysed limbs. In some cases the catheter may be required. Ergot and belladonna are in all probability useless in this disease, and they might be actually harmful by upsetting an already weakened digestion. After systematic trial the author is convinced that strychnine is distinctly irritating during the febrile stage. If the heart and respiratory muscles require stimulation, **Sparteine** or **Digitalis** should be used, with as little strychnine as possible. In many instances the heart requires **Codeine** or **Bromides,** not stimulation.

There is enough clinical experience to warrant the statement that **Lumbar Puncture** is fully as useful in this disease as in meningitis: and further, that the improvement has been accelerated so often in the later stages after lumbar puncture as to justify further trial.

2. *After-treatment.*—The value of **Electrical Treatment** has been much discussed, and it is now generally conceded that it should not be employed during the febrile period. This opinion is opposed by a few men who claim to have got ten good results from static electricity. After the pain and tenderness have passed, the interrupted current properly applied is of undoubted value. Although it can have no effect upon the diseased cord, it helps to preserve the muscle tone while the repair in the cord is in progress. Deep massage should be used under the same restrictions.

The prevention of contractures must be undertaken as early in the disease as the condition of the patient will permit. For the prevention of toe-drop it is not sufficient to keep the weight of the bed-clothes off the feet and trust to Providence. A firm foot-rest, or else an elastic attachment from the foot to the leg, should be applied early. In many cases in which the quadriceps and the peronei are affected, the patient is inclined to lie on the back with the knees drawn up. This attitude facilitates contractures of all the posterior groups and stretches all the paralysed anterior muscles. As this is exactly the condition that produces the most wasting and the worst deformities, the attitude should be corrected, by apparatus if necessary. If these matters are attended to from the first, the later use of apparatus may be obviated in mild cases. Nevertheless, most cases in which the paralysis continues for months will require plaster or other support for a time at least.

The various lines of orthopædic treatment are found in all modern text-books. There has always been much criticism of the plaster splint on account of its weight, yet experience shows that **Permanent Plaster Splint** is the only thing that will keep these limbs in proper correction for several weeks at a time. In order to give opportunity for electrical and massage treatment, Tilney and Truslow[7] have been using with excellent results a permanent plaster splint with a large fenestrum exposing the bodies of the muscles.

[For a very lengthy early bibliography, with discussion, see Mary P. Jacobi's article in *Pepper's System of Medicine*. The subject is also discussed in the *Annuals* for 1895, 1896, 1899, 1907.]

REFERENCES.—[1]*Arch. Ped.* Nov. 1907 ; [2]*Norsk. Mag. f. Laegevidenskaben*, 1905 ; [3]Osler, *Mod. Med.* ; [4]*Jour. Amer. Med. Assoc.* Oct. 26, 1907 ; [5]*Ibid.* Jan. 4, 1896 ; [6]*Nord. Med. Ark.* 1896 ; [7]*Long Island Med. Jour.* Dec. 1907 ; [8]*Zeit. f. klin. Med.* 1892 ; [9]*Arch. Ped.* Oct. 1907 ; [10]*Med. Rec.* Nov. 2, 1907.

SPINE, FRACTURE-DISLOCATIONS OF.

Priestley Leech, M.D., F.R.C.S.

Haynes[1] says that in the thoracic region it is practically impossible to reduce the deformity through manipulation alone, and if there are no cord symptoms it is much better to treat the case by a plaster jacket. Immobilization is imperative, as cases are recorded where a sudden movement has produced a fatal termination. Haynes uses the following method : If we do not wish to move the patient, make a wide Scultetus's bandage, composed of thick Canton flannel, well rubbed with plaster mud. Lay this alongside the patient, who is carefully rolled over face downwards on to the bandage, and the ends of the bandage are adjusted without disturbing the patient. In cervical injuries, with or without general anæsthesia, the patient's head and shoulders are brought beyond the edge of the table, and firm extension is made in a horizontal plane maintained by a broad bandage behind the occiput and beneath the chin, fastened so that it cannot slip, and long enough to pass over one shoulder, across the back, and under the arm of an assistant, who is seated high enough to bring his shoulders a little above the level of the patient. The assistant braces his feet against the table on which the patient lies, and can maintain extension in such a position without fatigue for half an hour. For the lower portions of the spine the hammock position is very satisfactory. With an ordinary iron bedstead a sling can be improvised by passing several turns of a strong body bandage from one side to the other ; the patient is placed on this face downwards, and steadied by assistants holding his arms upwards and legs downwards. The sagging of the support produces extension of the spine, and the support is included in the jacket, from which it can afterwards be removed.

In most cases the cord is involved, and the treatment must be guided by the amount of injury to it. The diagnosis is difficult, and if the damage is great, operative interference is useless. The following conditions are held to justify surgical interference : (1) To remove pressure produced by bone, whether the posterior arch of a vertebra, or only spiculæ of bone ; (2) To arrest hæmorrhage, remove blood-clots, and arrest an advancing paralysis ; (3) To allow oozing in traumatic œdema of the cord ; (4) To provide drainage in septic conditions of the cord. Haynes urges immediate operation in every case of fracture-dislocation of the spine presenting symptoms of cord involvement, even if the severity of the symptoms seems to point to complete destruction of the cord. Mistakes in diagnosis are easy to make ; we cannot be sure of the extent of the injury for several days, and meantime the period has passed within which surgical interference might have obtained striking results. He advises wasting no time in methods of plastic work for replacing the laminæ and spines. He also advises opening the dura in every case and inspecting the cord, and, if severed, uniting it. Of five cases on record where the divided ends were brought together, one died in ten days as a result of the injury ; the other four lived, and were improving at the date of the report, one two-and-a-half, and another four years after the injury ; and all showed unmistakable evidence of some restoration of functions between the sutured segments of the cord. Loose pieces of bone are removed, but those firmly adhering to the ligaments and not encroaching on the spinal canal are not disturbed. A dislocated vertebra may be reduced, and the wound is closed for primary union over a drain of several strips of rubber tissue or strands of silkworm gut, and a plaster case applied. The drainage should be removed in twenty-four to forty-eight hours. After three or four weeks' treatment in bed, if the patient's condition allows, a new plaster jacket should be applied with a Sayre's extension tripod, or after the horizontal hammock plan. A support to the spine should be worn at least a year after a laminectomy for a fracture-dislocation.

The pathological changes of fracture-dislocation of the spine may be divided into those affecting the bone and those affecting the cord. Bailey[2] says that in one-third of the cases the cord escapes injury, and this is more often the case in the cervical region, and in children more than in adults. The cervical and lumbar region are affected in half the cases, and the dorsal region in the other half. Most of the dorsal fracture-dislocations involve the eleventh and twelfth dorsal vertebræ : these produce the lumbar type of paralysis, and should be classed with these cases. Neurologically considered, the great majority of the cases of traumatic spinal paralysis are either of the cervical type, including the first dorsal segment of the cord, or of the lumbosacral type, including, of course, the cauda equina ; surgical statistics show a great preponderance of the latter over the former. Late results of injuries to the bones consist in osteomyelitis, which is very rare, in tuberculosis, and in traumatic spondylitis or Kümmell's disease, which affects most frequently the third and seventh dorsal vertebræ. The membranes of the cord are never injured alone ; they may be lacerated, and the lacerations cause extensive bleeding within the spinal canal, either inside or outside the dura : in Bailey's opinion, never without there being an extensive contusion of the cord associated with the bleeding.

Hæmatorrhachis never occurs by itself, and there is very little use operating for it, as the hæmorrhage will be rapidly absorbed. The cord may be extensively damaged, and show little or nothing abnormal at operation unless it is sectioned. The hæmorrhage in spinal-cord injuries has a predilection for the grey matter ; it often occurs as a focus of bleeding at a single point, from which columns of blood ascend and descend the cord in the grey matter. As the blood is absorbed, cavities are left in the cord (hæmatomyelopore). This focal hæmomyelia may occur in any region of the cord as part of the lesions secondary to fracture-dislocation ; it may also occur as a primary condition without demonstrable injury to the bone, and it is then found only in the cervical region, and results from stretching of the cord in sudden flexions of the neck, e.g., diving in shallow water. This primary focal hæmatomyelia has a rather unique clinical symptomatology and course, and its prognosis is relatively good. Finally, small blood extravasations may occur up and down the cord with or without spinal fracture. In fractures of the dorsal region the bone displacement is usually extreme and the cord lesion consequently severe ; few dorsal lesions of the cord are partial, and the outlook as a class is less favourable than in cervical cases. The rule that total abolition of the reflexes, especially in the cervical region, indicates a total lesion, is not reliable, as for several days after the accident the knee-jerks may be absent, and then return and become exaggerated, or in some cervical cases knee-jerks, once exaggerated, may later disappear altogether.

Bailey sums up the situation very well as follows : The injury to the cord takes place at the time of the trauma, the cord is bruised or lacerated or compressed, as the case may be, and as a consequence of this there ensue more or less softening and shrinking. The true damage, therefore, is a result of the initial and brief violence, the secondary and prolonged effect which may result from a narrowing of the canal having little or no effect. It is as though a banana were in a tube, and the tube were suddenly narrowed to half its size—all the injury to the banana would have occurred at the time of compression. Furthermore, long-continued pressure of the spinal cord seems improbable, for the reason that from the moment of the initial compression onwards, the cord undergoes softening, with a constant reduction in its volume, thus making more room in the canal and less opportunity for the so-called permanent compression. The only two exceptions are when splinters of bone have pierced the cord, and when there is compression of the cauda equina. The first, though rare, undoubtedly occurs, and when in the cervical region constitutes a cause for operation ; and in the second case the relief of pressure is as strongly indicated, and is as successful as it is in the peripheral nerves. As to regeneration of the cord there is some doubt ; the symptoms of the original injury may pass away, but this does not prove regeneration, and occurs quite as often without as with the surgical relief of pressure. These opinions, which are those accepted by most English surgeons, are in marked contrast to those enunciated by Haynes.

Lloyd, of New York[3], comes to similar conclusions, and says that regeneration of the cord has not been proved, and in thirty-two cases of laminectomy, though some have improved to a remarkable degree, in none can he attribute the improvement to regeneration. If regeneration does occur, we should have had more improvement in some of the cases that were not benefited.

Rotary Dislocations of the Atlas.—Edred M. Corner[4] writes on twenty examples of rotatory dislocation of the atlas, including two which belong to him and have not hitherto been reported. The features by which this condition may be recognized are: History of the accident, in which the violence is commonly applied to the front and top of the head; there are no symptoms of paralysis or anæsthesia, nor has there been recorded a case of spinal concussion. The neck is painful to touch and to move; it is stiff and capable of little movement. The position of the head is characteristic; it is flexed and turned a little to one side, usually the right; in more severe examples the head is bent towards one shoulder, so that the chin points to the other side; in the latter case it is probable that the head cannot be moved; in the former and less severe varieties the head can be rotated more to the side to which it is directed than to the other. The side to which the chin is directed is that on which the transverse process of the atlas is rotated backwards; the side to which the head cannot be rotated is that which is, wholly or partially, dislocated. By means of the rotatory movements present it is possible to decide whether the injury is unilateral or bilateral, but care must be taken in making observations. Normally the transverse process of the atlas can be felt half way between the tip of the mastoid process and the angle of the jaw; this can be felt plainly on the side from which the head is turned, unless, when the patient looks forwards, it is hidden by the angle of the jaws. On the side to which the head is bent it cannot always be felt, the finger sinking deeply inwards and forwards into the neck. The transverse process of the atlas has been displaced backwards. The condition of the spine is of interest, as sometimes it is more prominent than usual, and at other times less so; the prominence is due to flexion, and forward displacement of the head; great prominence means much forward displacement of the head, and therefore the odontoid process is very likely to be broken. An examination of the pharynx, preferably under chloroform, reveals two prominences, that on one side being due to the forwardly-displaced transverse process, and that on the other, which is bulkier and less distinctly defined, being due to the part of the axis which has been denuded by the backward displacement of the transverse process of the atlas on that side. A skiagram of the lateral view of the head shows a forward displacement of one side of the atlas owing to the transverse axis of that bone being oblique to the rays. A most important thing is to ascertain if the odontoid process has been broken. If it has not, there is far less danger in attempting a reduction of the dislocation, a proceeding which is otherwise dangerous. This is not easy to make out. Anterior skiagrams show nothing, and owing to the rotation of the head, and the patient's inability to open the mouth wide, a skiagram of the odontoid process cannot be obtained. The five points for diagnosis are: The position of the head, the positions and fixity of the transverse processes of the atlas, the examination of the pharynx, and the skiagram of the lateral view of the neck.

TREATMENT.—If the accident has happened a fortnight to a month previously, or the odontoid process is thought to be intact, an anæsthetic may be given. In a number of cases spontaneous reduction occurs when the muscles are relaxed; in others, gentle traction on the head and rotation will bring about the desired result. The head can be put up in plaster-of-Paris bandages and, later, in a poroplastic collar. If, on the other hand, the odontoid process is thought to be broken, keep the patient at rest in bed with the head immobilized with sandbags, and three weeks to a month later give an anæsthetic to examine the pharynx and reduce the dislocation. Should the surgeon not reduce the dislocation, the neck is put into a poroplastic collar; movements in the neck will return, but will be limited. Operative treatment, unless to relieve symptoms of pressure on the cord, is not likely to be of much use.

REFERENCES.—[1]*Med. Rec.* Mar. 23, 1907; [2]*Ibid.*; [3]*Ibid.*; [4]*Ann. Surg.* Jan. 1907.

SPIROCHÆTOSIS.

J. W. W. Stephens, M.D.

R. V. Moffat[1] describes the course of spirochæte fever as seen in Uganda. The incubation period is not less than seven days, but it may be much longer. As a rule the initial attack is followed by three or five relapses in a susceptible person: between the initial attack and the first relapse, from five to nine days; between the first and the second relapse, from five to eight days; between the second and third, from five to nine days; between the third and fourth, from eight to thirty-six days. Three to four days is the usual duration, but the later attacks are somewhat shorter. Parasites are most numerous in the first attack, and may be very rare in the later ones.

SYMPTOMS.—Malaise, headache, distaste for food, coupled with pains in the back and limbs. The temperature goes up to 104° F., more or less. The skin is hot and dry, and the face flushed. The temperature generally falls suddenly to normal, but may remain slightly elevated for a day or so after the crisis.

Digestive System.—The tongue is characteristic: moist, flabby, and deeply coated with white fur. Excessive vomiting is a prominent symptom among Europeans; liver and spleen are generally enlarged and very tender.

Respiratory System.—Definite pneumonic symptoms may occur, which disappear with rapidity as soon as the crisis supervenes. Spirochætes occur in the sputum in large numbers.

Nervous System.—Persistent and excruciating headache is constantly present and causes acute distress; it is accompanied by great tenderness of the scalp.

Eye Symptoms.—The eyes are commonly affected. The deeper vessels of the sclera around the cornea are injected. There are pain, lachrymation, and photophobia. The iris is affected, and there are some slight adhesions, which, however, can be broken down by atropine. Ophthalmoscopic examination shows in severe cases abundant deposits of pigment in the lens, and there is turbidity of the vitreous, the patient complaining of a cloud before his eyes.

DIAGNOSIS.—A fairly thick fresh film is examined, but if not found fairly readily, a dry film stained (e.g., with Leishman's stain) should be used.

TREATMENT.—**Arsenic** perhaps tends to decrease the number of relapses. A smart purge at the onset is beneficial. **Morphine** may be required to allay the intense headache; it also checks the vomiting. On the first sign of any eye symptoms, **Atropine** should be instilled, and the pupil kept dilated.

Spirochæta laverani.—A. Breinl and A. Kinghorn[2] describe the spirochæte in the blood of a white mouse, and also in a wild mouse. It is very minute—1·8–3·75 μ long—and the number of parasites is generally very scanty.

REFERENCES.—[1]*Lancet*, Jan. 26, 1907; [2]*Ibid.* Sept. 8, 1906.

SPLEEN, SURGERY OF.

Rutherford Morison, F.R.C.S.

D'Arcy Power[1] gives some cases which are of interest in illustrating the surgery of the spleen. The first was a healthy looking married woman, aged 42, who came complaining of an abdominal tumour simulating an advanced pregnancy. At the operation a large spleen, 8 in. by 4 in., and weighing 2½ lbs. in the fresh condition, was removed. Pathologically it was a simple hypertrophy. During convalescence a left subdiaphragmatic abscess formed, the evacuation of this being followed by a fæcal fistula which subsequently healed. Two years later she was successfully treated for a leg ulcer by potassium iodide. Though a history of trauma to the left side two years before the splenectomy was given, Power thinks the condition was a syphilitic splenic hypertrophy, the leg ulcer and subdiaphragmatic abscess being confirmatory evidences.

The next case was one of primary sarcoma of the spleen in a married woman, aged 49. Eight months before, there had been sudden acute left hypochondriac pain just after a meal. The attack was accompanied by vomiting, which lasted for a week. Three months later an abdominal tumour became evident, and there was a return of her other symptoms, which persisted up to the operation. The tumour was neither renal nor pelvic, and was assumed to be splenic in origin. Splenectomy was performed, the organ weighing 66 oz. Microscopically it was a round-celled sarcoma. Six months later the woman died, evidently from cachexia.

He mentions that the post-operative danger in splenectomy is hæmorrhage due to the tearing of one of the many thin-walled veins; he therefore uses floss silk as a ligature.

The third case was one of ruptured spleen in a boy aged 16, due to a kick from a horse. On admission there was shock, a fast though regular pulse, also a little rigidity of the abdominal muscles. Except for these there was no cause for anxiety. The following noon he became much worse. A median laparotomy disclosed much blood in the peritoneal cavity and a laceration of the lower inner part of the spleen. This was plugged with gauze introduced through a flank wound. The patient made an uneventful recovery.

A further case of splenic rupture was in a man aged 23. The wheels of a dray had passed over his abdomen. Four and a half hours after the accident a median laparotomy was done, when blood gushed from the peritoneal cavity. The spleen was softened and torn, and was treated similarly to the previous one. He died two days after operation. Power considers that it would have been better if he had done a splenectomy, as the packing at the operation had not effected complete stasis.

Alexander[2] mentions a case of rupture of the spleen in which the organ was adherent to the diaphragm, and therefore more liable to injury from direct trauma. The patient, a man 34 years old, fell over a form and hurt his side. The morning after the accident he did his ordinary work for six hours, trundling a heavy wheelbarrow. At the laparotomy, forty-eight hours after the accident, blood was seen to be oozing from two holes on the surface of the spleen ; the organ was excised. As the blood was entirely confined to the left hypochondrium, the writer inferred that rupture of the splenic capsule did not take place until after his arrival in the hospital. Recovery was complete.

Ellsworth Eliot, jun., in the *New York Medical Journal,* calls attention to the fact that enlargement of the spleen is a predisposing cause for a subcutaneous rupture in the presence of slight trauma. It may be due to direct violence in the left hypochondrium below the costal margin ; indirectly through contiguous ribs ; to violence to the abdomen as a whole, e.g., a cart wheel passing over the belly ; or to rupture by *contrecoup* due to violence to the *right* side. With a splenic rupture other organs may be simultaneously injured. In mild cases the capsule itself may remain intact ; in severe ones fragments may be found lying loose in the pelvis. Sometimes the vessels at the hilus are ruptured. Rarely the hæmorrhage is into the lesser peritoneal cavity. He considers abdominal rigidity an important guiding factor in making a diagnosis. Splenectomy is advocated in preference to suture, packing, or cauterizing. Charts are appended showing elaborate blood-counts done at different dates after the operation.

A dislocated spleen with torsion of the pedicle complicating pregnancy is instanced by H. Meek.[3] The patient was a married woman aged 32. At the age of 15 she had malaria, and at 17 typhoid fever. For two years previously she had had left-sided abdominal pains, which were attributed to oöphoralgia Three weeks before admission there was an acute attack of pain, attended by fever ; morphia was required to ease her sufferings. In the left flank was a very tender abdominal tumour: and the patient was also three months pregnant. Splenectomy was done. The organ was 2½ in. by 1 in.: there was torsion of the pedicle to the extent of half a turn from left to right. The patient did well, and was delivered of a full term healthy child six months later.

Two cases of excision of ruptured spleen are given by E. W. Roughton and T. P. Legg.[4] Roughton's case was a child of 7, over whose abdomen a wheel had passed three hours before. There was great collapse, and laparotomy revealed a spleen which was reduced to pulp. The gastrosplenic omentum was ligatured, and loose bits of spleen were removed. Recovery was uneventful. Eighteen months afterwards the axillary and groin glands, and also those on both sides of the neck, were somewhat enlarged.

The second case was that of a child of 12, who, whilst running in the street, fell on to the kerbstone. Thirteen hours later the signs of intra-abdominal injury became marked, laparotomy was done, and an extensively lacerated spleen excised. Recovery was complete.

An excellent record of the blood changes in the second case is given by Emery, illustrated by several charts. The examinations were made at stated intervals.

The post-operative symptoms which have followed splenectomy are: (1) Rapid emaciation and weakness; (2) Great thirst; (3) Persistently rapid pulse; (4) Intermittent elevation of temperature; (5) Great anæmia; (6) Drowsiness, peevishness, and irritability of temper; and (7) Griping abdominal pain.

The advisability of performing splenectomy for Banti's disease is urged by G. E. Armstrong.[5] He has collected from the literature thirty-two cases with nine deaths, giving a mortality of 28 per cent. The disease appears to be most common from 10 to 40 years of age. The sex is stated in twenty-eight cases, sixteen being females. The average weight was 4 lb. 2 oz. All the patients, where splenectomy was mentioned, were quite restored to health.

Proof that the spleen is not passive in this disease is gleaned from the facts that in many cases the liver is reported to regain its normal size; there seems to be complete relief from the recurring and often alarming hæmorrhages which so often occur in Banti's disease; and finally, that the improvement seems to be of a permanent character.

He reports the case of a male, aged 26, who five years previously had received a blow in the left hypochondrium which made him vomit and confined him to bed for ten days. There was muscular rigidity over the injured area, a quickened pulse, and some pyrexia. Six days later the spleen was found to be enlarged and firm; from this time it became steadily larger until it extended down to the iliac crest, and two inches across the median line. The blood was normal. Nine months before operation there was a large left varicocele, and the veins of the left leg were much dilated. There was slight jaundice and enlargement of the liver; if he had a good meal, uncomfortable sensations, followed by movement of the bowels, and a feeling of tightness were produced.

He complained that chilling of the surface brought on diarrhœa. Splenectomy was performed.

He gives a full list of splenectomies done for Banti's disease, and maintains that a diagnosis of the condition should lead to an immediate splenectomy, as the disease is progressive and tends to destroy life.

W. L. Bierring and C. Egdahl[6] also report a case of Banti's disease where splenectomy was performed. Striking facts were, a low percentage of hæmoglobin, and leukopænia; after splenectomy, a leucocytosis, at a maximum twelve days after operation, and chiefly of the large mononuclear variety; the absence of myelocytes and scarcity of nucleated reds before and after operation.

Movable Spleen.—T. G. Moorhead[7] says this term is reserved for cases where the organ has slipped from its usual bed into some other part of the abdomen. "Dislocation" means that, after moving from its normal site, it again loses its mobility owing to adhesions.

As a rule a wandering spleen is larger than normal. The cause of the relaxation of the splenic ligaments is unknown. Trauma due to rupture of these ligaments is reported to be a cause. It is commoner in women and in those with a relaxed belly wall. The spleen may reach any situation in the peritoneal cavity, but the commonest sites are the cavity of the true pelvis and the left iliac fossa. The difficulty in diagnosis is often due to an obliteration of the characteristic shape, due to engorgement of the organ following torsion of the vessels. He gives an account of such a case which was regarded as a hydronephrosis until the operation. There was advanced mitral disease, and an operation, at which nothing was done, was only undertaken in the endeavour to relieve the patient's pain. The feature of this case was the extraordinary variation in the size of the tumour. He considers that splenectomy has advantages over splenopexy in these cases.

REFERENCES.—[1]*Clin. Jour.* Nov. 23, 1906; [2]*Lancet*, June 12, 1907; [3]*Brit. Med. Jour.* April 30, 1907; [4]*Lancet*, June 22, 1907; [5]*Brit. Med. Jour.* Nov. 10, 1906; [6]*Jour. Amer. Med. Assoc.* Oct. 13, 1906; [7]*Pract.* Aug. 1907.

SPRUE.

(*Vol.* 1900, *p.* 479)—*General treatment:* Rest in bed is necessary, also warmth. *Diet:* The orthodox diet has been one of milk, to which **Citrate of Soda** may be added to render the clot lighter and more digestible. Cantlie and others have given up milk, finding an all-meat diet more suitable. Thin and others recommend strawberries. *Medicines:* Bigg advises the administration of **Yellow (exposed) Santonin**, gr. v, night and morning, for a week, in salad oil.

STAMMERING.

George C. Cathcart, M.B., C.M.

There has always been a divergence of opinion regarding the nature and origin of this impediment of speech. It has been maintained by certain authorities that it is hereditary, and occurs chiefly in patients with a neuropathic diathesis. But it may be argued that, if constitutional nervousness were always productive of stammering, the number of victims to the habit would be huge, and moreover, there would necessarily be a greater number of female sufferers, which it is well known is not the case. Many cases also have occurred in healthy families in which the defect has not been apparent, at any rate during recent generations. Neither is it evident that stammerers are afflicted with weak nerves, although in some instances the perpetual worry and annoyance which it causes may produce nervous symptoms, which will be doubly marked if the stammerer be of a nervous diathesis.

Since all speech is primarily due to imitation, it is much more likely that these cases of supposed heredity have originated through the same process. Children, either consciously or unconsciously, are especially prone to imitate any mannerism, whether of speech or behaviour, and on this account peculiarities of voice or enunciation usually run in families, so that they are erroneously supposed to be transmitted, when in reality a little patient correction, or perhaps a different environment, possibly both, before the habit had become chronic, would suffice to check it. In some cases a child intentionally affects a stammer to tease and annoy a companion, and perhaps persists in this course until the stammer becomes habitual. Children, too, have been known to develop the impediment from associating with the most casual acquaintances or playfellows, whilst stammering nurserymaids have been before now the cause of its appearance in families previously untainted. The writer knows of a case in point, the eldest child having contracted the habit with his first lispings from a stammering nurse ; each of the younger members of the family mimicked the trick in turn, the youngest, with five bad examples before him, being the worst of all. It was found, however, in at least two of this group, that the stammering disappeared on removing them even for a short time to different surroundings.

The first symptoms often appear during the weakness succeeding a severe illness, such as typhoid fever, or diphtheria. If following the latter, paralysis of the soft palate or diaphragm may have been a factor in the case; or it may have been the result of a bad fall, fright, or flogging. Even harshness in correcting sensitive children, or severity over lessons, may induce it. Though the first manifestations usually appear about the fourth or fifth year, boys of ten or eleven have been terrorized into the habit by harshness at school. Many sources of peripheral irritation, however, may act as exciting causes, such as intestinal worms, the eruption of a permanent molar tooth, adenoid growths in the naso-pharynx, or a tight prepuce. It has often been stated that Jews, owing to their being circumcised, are exempt from it, but it so happens that the writer has had several cases of Jewish boys who stammered. It may be mentioned that the operation of circumcision is not always efficiently performed by the rabbi, and in one case known to the writer there was a very notable improvement in articulation after this operation had been repeated by a surgeon.

In order to enter into the difficulties with which the stammerer is confronted, it may be well to analyze briefly the processes by which the ordinary individual articulates, as well as to note the abnormal processes by which this impediment is produced. As speech consists of words, and words are combinations of vowels and consonants, so the elementary sounds of vowels and consonants must be considered, certain of these sounds presenting greater difficulties to some stammerers than to others.

The concerted action of three separate mechanisms is necessary for the formation of vowels and consonants:—(1) The respiratory mechanism to supply the breath which sets the vocal cords in vibration; (2) The laryngeal mechanism, consisting of two parts: (*a*) the true vocal cords, which by their vibration produce the voice, or sound of speech, (*b*) the false vocal cords, which govern the exit of the breath; (3) The oral, or perhaps one should say the oro-nasal, mechanism, which, working by means of the tongue, soft palate, teeth, and lips, moulds the voice or material of speech into the different vowels and consonants. Every vowel, being a continuous voice sound, sets these three mechanisms in action.

Ellis defines the vowel as "a modification (due to resonance in the cavities above the larynx) of an original quality of tone produced by the vibrations of the vocal cords in the larynx." The writer's singing-master in Naples, the late Signor Scafati, pointed out to him that every vowel has a double resonance, a deep one at the back of the mouth, and a higher one in the front of the mouth. This may interest those stammerers who wish to make a more extended study of the subject. Signor Scafati also held that the decay of modern singing and oratorical speaking was due to the fact that vocalists would no longer devote sufficient time to the study of their art to enable them to obtain this deep resonance in all the vowels, which gives quality and carrying power to the voice.

Every stammerer, if he be well taught, should be able to obtain this resonance and keep it always in use, so that he should have a better voice at the end of his training than the majority of his fellows who have started life with no impediment of speech.

In 1849, Melville Bell constructed the first and best physiological alphabet. In it he divided the consonants into two main groups: (1) Voiceless or breath consonants, in which there is no voice sound; and (2) Voice consonants, which have the same oral position as the former, and also a concomitant voice sound.

Voiceless	Voice	Voice and Nasality.
p	b	m
wh	w	
f	v	
t	d	n
th	th(dh)	
	l	
	r	
s	z	
sh	zh	
k	g	ng
	y	

On referring to the table it will be seen that there is complete contact between (1) The lips where *p* and *b* are formed; (2) Between the tip of the tongue and the spring of the palate where *t* and *d* are formed; (3) Between the back of the tongue and the soft palate where *k* and *q* are formed. These three positions have been well named by Professor Wyllie the first, second, and third stop positions.

While these positions are being held, the voice may come out through the nostrils, which gives us *m*, *n*, and *ng* respectively. For *wh* and *w* the lips are approximated. For *f* and *v* the lower lip touches the upper teeth. In *th* and *dh* the tip of the tongue touches the inside of the upper teeth, and the under surface of the tongue is very slightly protruded between the teeth. In *l* the tip of the tongue is applied to the spring of the palate, while the sides are allowed to vibrate freely. It thus differs from trilled *r*, in which the tip vibrates while the sides remain still. *S* and *z* can be formed either by approximation of the upturned tip of the tongue, or the dorsum of the tongue and the hard palate. *Sh* and *zh* are formed by the approximation of the dorsum of the tongue and hard palate. *Y* is merely a tight *e*. The consonants that generally present the greatest difficulty to the stammerer are the breath or voiceless consonants, and whoever would undertake the treatment of a case of stammering should be cognisant of the proper way of producing these consonants.

Melville Bell, so far as the writer is aware, is the only author who has pointed out that not only the treatment of stammering, but the essential difference between good and bad voice production, lies in a recognition of this fact. In the postscript to "Elocution," he says: "The voice organ and the articulating organs are entirely separate and independent: and the elements of their respective utterances are not coalescent, but merely sequent, however rapid and close may be their apparent connection. All actions of the vocal organs which partially or wholly obstruct, or which compress, the breath or voice, are called articulations (or consonants). The necessary effect of such obstructions, or compression, is a degree of explosiveness in the breath when the conjoined or approximated organs are separated. Hence arises an element of audibility produced by or with the mouth. When the current of unvocalized breath is altogether stopped by organic contact, as in *p*, *t*, *k*, the only audibility that the letter so formed can have is the puff or explosion which follows the separation of the organs. This must, therefore, be clearly heard, or the letter is partially lost. In the mode of producing this little effect lies one of the most important principles of speech—a principle on the right application of which depends much of a speaker's distinctness, and all his ease. *Here lies the point of importance. If only the breath from the mouth, and not any from the lungs, be ejected, a distinct sharp, quick percussion would be heard, which gives to these breath articulations all the audibility of which they are susceptible.* The want of pharyngeal power manifests itself by distension of the lips and cheeks for *p* and *b*; by incontinency of breath for *t*, *k*, *d*, and *g*; by laborious actions of the chest to create the explosive audibility of these letters ; by scattering the saliva for *s*, *f*, and other continuous elements ; and by general indistinctness of articulation. It is the want of power to retain the breath after consonants which causes the great difficulty that stammerers experience in joining consonants to succeeding vowels. They will often get smoothly over the consonants and stumble at the vowel. They must bear in mind that the breath in articulation is exploded from the mouth, and not from the chest. The space within which air is compressed is *above* the glottis ; and the effect of the compression must not be communicated below the glottis. The quality of clear-cut articulation depends on the due separation of the functions of the vocalizing and articulating organs. *The vocal sound seems to be. unbroken, because the actions of the tongue and the lips, while interwoven with it, do not interfere with it.* All singers and all speakers may attain this bright excellence of articulation by forming consonants with the economic impulses of the pharynx instead of the wasteful explosion of breath from the chest."

It is surprising that Wyllie has failed to note this important practical point in his classic work, " The Disorders of Speech," as may be seen in the following passage, which refers to his physiological alphabet :—

" Before I proceed to draw up this alphabet, let us consider, in the light of a few examples, the delicately co-ordinated action which is carried on in combination by the two mechanisms, laryngeal and oral, in the production of ordinary speech. Take the word *satisfy*. Here the laryngeal mechanism is called upon to touch off three separate vocal sounds, each of which is evolved by the vocal cords during an instant of approximation, viz., the sounds *a* and *y* and *i*, *and between these sounds the open glottis must permit the current of air to pass noiselessly into the mouth, where it will be utilized for the production of the voiceless consonants*, which are made, as it were, to clothe the vowels in front and behind. Let the naked vowels as they sound in this word, be pronounced, and then the full word itself ; and the extreme delicacy and exactitude of the three separate coaptations of the vocal cords will be realized. Let there be any delay in the pronunciation of the first vowel, and the initial *s* will be hissed and prolonged exactly as it is by the stammerer."

But the voice is not an exclusive possession of the vowels ; many of the consonants are in part made up of voice. Take the word *wonder*, for example. Here every letter, consonant and vowel alike, contains voice ; so that the larynx has to maintain its vocal cords in coaptation throughout the whole word, which may even be repeated many times in a deliberate and continuous hum. But add to this word the final syllable *ful ;* and as the word with this addition is being hummed over, note the moment of interruption of the hum during the production of the voiceless *f*. For a moment the vocal cords have been thrown apart to permit of the passage of voiceless air for the *f ;* but they are immediately brought together again for the production of the vocal *u*. These examples may suffice to show what a delicate and exact work the larynx has to perform in supplying the vocal element to the vowels and vocalized consonants, and in intermitting the voice production when the air is required for consonants.

With these facts fresh in our memories, we will consider what takes place when a fit of stammering comes on. In certain instances there is a want of co-ordination between the respiratory mechanisms, and the patient may even try to speak without first inhaling. In the great majority of cases, however, the want of co-ordination is between the laryngeal and oral mechanisms. Kussmaul has well described the result in the following graphic word-picture of a stammerer during a paroxysm :—

"He closes the oral canal at one or other of the closing points, according to the nature of the letter to be articulated, and this he does as well as a man who possesses the faculty of speech could do it ; instead, however, of allowing the vowel to follow without delay, he presses his lips, or his tongue and teeth, or his tongue and palate, more firmly together than is necessary ; the explosive escape of breath does not take place, the other muscles of the face and those of the glottis, and even the muscles of the neck, become spasmodically affected like those of articulation, gesticulatory movements are made, the abdomen is retracted, the head is drawn backward, and the larynx is drawn forcibly upwards, until finally he works himself into a frightful state of agitation ; his heart beats forcibly, his face becomes red and blue, his body is bedewed with perspiration, and he may present the appearance of a complete maniac."

The voice, produced by the laryngeal mechanism, is wanting in all such cases, and the stammerer, not knowing what is at fault, misdirects his energy into the oral mechanism. "From the nerve centres of oral mechanism thus surcharged," as Wyllie points out, "an overflow in many cases occurs. . . . The habit of overflow in the nervous mechanism of articulation wears in time easy channels for the overflow ; so that very slight surcharge may eventually suffice to produce spasmodic movement of the neighbouring muscles."

When the false vocal cords cause the obstruction, the sufferer may stand with the mouth wide open, and, perhaps, with the tongue protruded and eyes staring, though when the spasm passes off, the words rush out until breath is exhausted ; on renewing breath, however, the same thing is liable to occur again.

TREATMENT.—The first step is to attend to the patient's general health. All sources of peripheral irritation which may have been the exciting cause, or tend to keep up the condition, should be removed. The pharynx and naso-pharynx should be inspected for enlarged tonsils and adenoid growths, and if present they should be removed. The teeth should also be attended to. Male patients should be examined in regard to the condition of the prepuce.

Parents of stammerers often fail to realize the importance of trying to cure the impediment at an early stage. They may be divided roughly into two classes : (1) Those who pay little heed to the anguish of nerves which is often suffered in childhood, or to the disabilities to which the disorder may condemn their offspring in later life; and (2) Those who are duly sensible of the desirability of treatment, yet hesitate to remove the child from school in order to carry it out effectively. Indeed, the writer has lately come across two patients who informed him that they often contemplated suicide at school, owing to the incessant jeering of the boys, and the stupidity of the master, who thought that the best way to cure them was by severe thrashings.

The mother of a very young child, or perhaps the governess, may often obtain a perfectly successful cure by persistently and patiently insisting on the repetition of any syllable (or syllables) over which the little one has stumbled. This course should be persevered in until the difficulty has ceased, and a careful watch should always be maintained in case it should recur.

As a rule, the longer the habit has existed, the more difficult it is to cure, and if it be allowed to persist until the patient reaches the period of adolescence, his powers of concentration and of imitation may have become impaired. It is then often very difficult to effect a cure, as the stammerer may have grown utterly indifferent to the defect; and, in the experience of the writer, it is useless trying to deal with such cases. If, on the other hand, the patient be willing and anxious to be cured, treatment should begin at once, and in most cases will be successful. In that of a boy at a public school, it is undoubtedly much better to keep him away for a term, or as long as his case requires treatment. It saves time, in the end, to establish a habit of correct speech before letting him return.

The practice of forming a special class for stammerers, so that their education and the treatment may proceed together, must be emphatically condemned. Several patients have been brought to the writer who have been treated in this manner, and in no single instance was the result satisfactory, while in some cases the affection had been aggravated.

The teacher must first endeavour to gain the confidence of his pupil. Unless this be obtained the treatment will fail, although another teacher, working on similar lines, may readily succeed. It has been pointed out already that, with correct articulation, "the vocal sound seems to be unbroken because the action of the tongue and lips, while interwoven with it, do not interfere with it." The first step, therefore, is to obtain good vocal sound, which can be made continuous during forty, or even sixty seconds. To this end a proper method of respiration is absolutely essential.

For many years physiologists have divided respiration into two strict types: (1) Ordinary; and (2) Forced, or "extraordinary." During sleep, or while going through the daily avocations of life, the respiratory muscle chiefly brought into play (in man at least) is the diaphragm, and this constitutes ordinary breathing, and is practically unconscious.

Taking what the physiologists teach as being scientifically true, many teachers of voice production insist that the diaphragm is the chief muscle to be considered. If, therefore, pupils find they need more breath than in ordinary life, they insist on the diaphragm being used more vigorously. This is an error which has had most baneful effects.

Good vocal sound can only be produced when the resonators of the voice are used to their utmost capacity. The chief resonator is the chest itself, especially the upper part; but it can never be used to its fullest extent if the diaphragm be brought into activity at the beginning of inspiration. The breathing which should be considered proper in voice production is that obtained by filling not merely the lower, but the upper part of the chest, chiefly by means of the serratus magnus and intercostal muscles.

The ribs should move backwards and outwards, turn on their axes, and move upwards, carrying with them passively the breast bone and the inner ends of the collar bones. The front abdominal wall should sink inwards, instead of protruding as in diaphragmatic breathing, the chief use of the diaphragm being to prevent the abdominal viscera being sucked up into the thoracic cavity.

This is quite different from the "forced" or "extraordinary" type of breathing, in which the collar bones are *actively* pulled up by the muscles above them. This method allows the chest to be used to its fullest extent as a resonator. This being a natural method, it also allows the exit of the breath to be fully and easily controlled by the false vocal cords which, as Wyllie has shown, should be the case. To obtain this control, take a breath, and then allow it to escape with a slight hissing noise, made at the larynx with the mouth wide open. It often happens that this is found difficult at the beginning, but it should be practised until the sound can be continued without fatigue, at the same time keeping the upper part of the chest expanded as long as possible.*

Several writers on the subject have stated that most cases of stammering are entirely due to a faulty method of respiration, i.e., that the diaphragm was not sufficiently used. If this were so the cure would be so easy that there would be no cases to record. To prove that the above view is erroneous, it is only necessary to make the patient intone while still using his ordinary method of breathing; if this is done the stammer disappears, because during the intonation the mind of the patient is concentrated on the effort to produce a continuous vocal sound.

The object of the writer in giving so much attention to the subject of breathing is not merely to improve the vocal sound, but also to give confidence to the stammerer, because the knowledge that he can take a deep breath, and retain it, or exhale it under voluntary control, will go far to help him to overcome his nervousness.

Very few cases are primarily due to defective breathing, and in these, when the patient tries to begin to speak without taking a proper breath, it is generally sufficient merely to point out the error in order to have it corrected.

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* For fuller instructions in the practice of this type of breathing and breath control, see "Twelve Lessons on Breathing," by George E. Thorpe, to be obtained from Messrs. Sammels & Taylor, 259, Oxford Street, London, W.

In cases which have their origin in a tight, spasmodic closure of the false vocal cords, the difficulty lies with the initial vowel. The spasm can be instantly relieved, however, by trying to inhale, thereby opening the false vocal cords. In order to prevent it the patient must at first alter the proper method of voice production, and preface each initial vowel with an aspirate, thus: *ha-he-ho*; the effect of this preliminary escape of breath being to prevent a closure of the false vocal cords. The patient must persevere with this method until he has overcome all fear of not being able to pronounce any initial vowel. He must then gradually drop the aspiration, and learn to attack each vowel clearly and distinctly.

In the great majority of cases the difficulty occurs with a consonant produced either at the first, second, or third stop positions mentioned above, or perhaps at all three of them. Less frequently it may be with one of the other consonants. It is important to find out exactly where it does arise. If the case be only slight, or just beginning, one may take these consonants first; but if it be severe, and the patient be also very nervous, it is better to leave the difficult consonants alone until the others have been mastered. Taking it for granted that the patient has continued the practice of breath control until he can hold the breath for at least twenty-five seconds, let him now try to intone or sing for that length of time on the vowel sound *ah*, or *oh*, at as low a pitch as he can take with ease. Then, while intoning, and sustaining the tone evenly, let him attack one of the voice consonants, *o-mo-mo*. It is best to begin with the consonants formed at the first or second stop positions, and not try the ones formed further back until these have been mastered. Any one having a good musical ear can do this at once, but those not so gifted take a long time before they are conscious that their own voice stops, and that the tone seems to jump up, whenever they try to form the consonant. Regular and patient practice, however, will at last enable them to do so. When the voice consonants have been mastered, the breath consonants should be begun in the order given in the table, but as these are much more difficult to manage, their positions should not at first be strongly taken; for this reason they will seem to be indistinct; but if the patient persevere, articulation should improve rapidly. When this stage has been reached, the intoning may be dropped, and the exercise be done in an exaggerated drawling tone, and when the patient has gained sufficient confidence in himself he can begin to take part in general conversation.

Reading aloud and reciting poetry in an oretund tone should be part of his daily routine. If the training has been properly carried out, he should by this time be able to speak more distinctly, with greater ease, and with a better tone than his fellows, and even if a relapse should take place—as it sometimes does after a severe illness, or nervous shock—it will not be so difficult to cure.

Should the patient be unusually nervous to begin with, or when, even after having learnt to produce his voice properly, he fails to do so when mixing with strangers, the writer has found hypnotism, in the hands of a properly qualified medical man, of the utmost benefit.

The lessons should, if possible, be given twice a day, for half an hour at a time, and be continued for several weeks : the length of the course will differ in each case.

STERILITY IN THE MALE. *J. W. Thomson Walker, M.B., F.R.C.S.*

Hagner and Fuller,[1] of Washington, discuss the question of sterility in the male and its surgical treatment. Gross in 192 cases of sterile marriage found the male deficient in 18 per cent. Kehrer's statistics in a series of ninety-six cases are quoted. Azoospermia existed in 21·31 per cent, and practically all of these had suffered from unilateral or bilateral gonorrhœal epididymitis. Oligospermia was present in 11·45 per cent. Of the ninety-six cases, 63 per cent had a history of gonorrhœa with infection of the epididymis and prostate. The authors refer to the sterility caused by exposure to X rays. One prolonged exposure has been known to cause sterility lasting three months. At first the spermatozoa are dead, and later disappear altogether. Permanent sterility has not been produced by this agent. The authors specially refer to cases where bilateral gonorrhœal epididymitis is the cause of sterility. They quote the statistics of Benzler, who found that of the soldiers who had suffered from gonorrhœa in the German army, and had been married three to nine years, 10·5 per cent where no epididymitis had occurred were childless, and were probably cases of prostatitis and seminal vesiculitis ; 23·4 per cent had unilateral epididymitis, and 41·7 per cent had bilateral epididymitis, and were childless.

The globus minor is the portion of the epididymis most involved, and Martin, of Philadelphia, has introduced an operation for anastomosis of the globus major with the vas deferens, so that the obstruction is thrown out of circuit. An incision is made down to the epididymis on the outer side, so as to avoid the spermatic artery. The artery of the vas is pushed aside, and a half-inch incision is made along the axis into the lumen of the vas deferens on a level with the globus major. A portion of the globus major is picked up between two fine forceps, and an elliptical piece removed. Four fine silver-wire sutures are inserted, one at each angle of the wounds and one on each side, and the vas and epididymis are thus united. Live spermatozoa have appeared in the semen of a man a month after this operation. Martin has reported seven cases, in four of which spermatozoa appeared after operation, and one of these produced a healthy child ; two were lost from observation, and one case failed.

REFERENCE.—[1] *Med. Rec.* Aug. 10, 1907.

STOKES-ADAMS' DISEASE. (*See* HEART DISEASES.)

STOMACH DISEASES. (*See* also GASTRIC ULCER, HÆMORRHAGE, GASTROPTOSIS.) *Robt. Hutchison, M.D.*

Sahli's Desmoid Reaction.—In 1905 Sahli published a new method for testing gastric function without using the stomach tube. It is based on the assumption that catgut in the raw state is soluble in the peptic secretions of the stomach but entirely indigestible in the pancreatic juices (Ad. Schmidt). To carry out the test one encloses a pill (of methylene blue 0·05 gram, or iodoform 0·1 gram, or both together, with sufficient ext. glycyrrhizæ to make a pill not over 3 or 4 mm. diameter) in a rubber sack made by twisting the pill in the centre of a square piece of thin rubber tissue, and tying the twisted neck with three turns of number 00 raw catgut previously soaked in cold water until soft, care being taken that the knots are both on the same side of the bag. The rubber is then trimmed away carefully so that only a little free edge of about 3 mm. remains beyond the ligature. It is essential to see that the cut edges of the rubber do not cohere, that the complete pill sinks instantly in water, and is watertight.

This "desmoid pill" is given with or just after the mid-day meal, and the urine collected at periods of five, seven, and eighteen to twenty hours later is examined for methylene blue, or iodine, or both. The methylene blue is recognized by the greenish-blue colour imparted to the urine, or in absence of colour the urine is boiled with $\frac{1}{5}$ volume of glacial acetic acid, when a greenish-blue colour appears if the chromogen of methylene blue is present. The chromogen alone is seldom found; most cases without colour are due to the fact that the gut has not dissolved. Iodine is recognized by strongly acidifying the urine with pure nitric or sulphuric acid, and shaking out with a little chloroform, when the rose colour is readily detected. It may be tested also in the saliva with starch paper or acid. If the methylene blue or iodine be found within eighteen to twenty hours after the ingestion of the pill, the test is called positive; otherwise, negative.

The advantages claimed are that the test is simple in application, that it causes the patient no distress, and more important yet, that, as it is given with the principal meal, it is subjected to the activities of the gastric functions when they are stimulated to do their utmost; for, in accordance with Moritz' observation, the pill being relatively heavy will remain in the stomach the maximum length of time, and so test fully the activity of the gastric juice. The desmoid will, therefore, often give a positive result when with the test breakfast we get an absence of free hydrochloric acid. This is, as Sahli pointed out, a matter of considerable diagnostic importance in distinguishing cases with true achylia, carcinoma, or pernicious anæmia, from less serious disorders in which the stimulus of the Ewald breakfast is insufficient to cause an excess of hydrochloric acid.

Boggs[1] has tested the reaction in thirty-four cases in which there was impairment of the gastric function, and in twelve normal persons. His results bear out Sahli's contention that the desmoid pill does show the ability of the stomach under the best conditions. Particularly is this true with regard to the presence of free hydrochloric acid, and he agrees with Eichler and Kuhn that its principal value is as a test for free hydrochloric acid. It cannot replace the test meal, but is a useful adjunct to it.

Szczepanski[2] is also of opinion that a negative desmoid reaction indicates absence of free hydrochloric acid, provided always that one can exclude exaggerated motility of the stomach, that the permeability of the intestine and kidneys is normal, and that from the time at which the reaction appears we can estimate approximately the degree of acidity.

On the other hand, the results of Ludwig v. Aldor[3] and of Lewinski[4] are not so favourable. The former, who experimented on a considerable number of patients, concludes that the desmoid reaction is not a reagent for free hydrochloric acid, but is to be regarded as an index of the proteolytic power of the stomach in a general sense. A negative result only justifies one in concluding that there is some functional disturbance of the stomach, but gives no information as to its exact nature. It may occur, for instance, in cases of hyperchlorhydria associated with hypermotility, as well as in slight degrees of subacidity, or in complete achylia. The method is no substitute for a test meal, but should only be employed where the latter cannot be given. Lewinski comes to very similar conclusions, and "agrees with the increasing number of those who do not regard the desmoid reaction as a valuable addition to diagnostic methods."

Hellman,[5] who is the latest author to review the whole subject, concludes from a critical study of 238 recorded cases that (1) If a positive reaction appears within eight hours, a test meal will always give a confirmatory result; (2) In other cases agreement between the two tests is not constant, which is due to the fact that a whole series of other factors besides the amount of hydrochloric acid in the stomach contents plays a part in the reaction; (3) The reaction has a certain positive value, especially as a preliminary test before proceeding to a test meal.

A New Test for Free Hydrochloric Acid.—According to Simon[6] the power of nitrous acid to turn an alcoholic solution of guaiac blue can be made use of as a simple and striking test for small quantities of free hydrochloric acid. He proceeds as follows: a small knife-point of *pure* dry guaiacum resin in powder is dissolved in 5 cc. of the following mixture: sp. æth. nit. 10 cc,. sp. vini rect. 40 cc. A few cc. of the solution (freshly prepared) are poured over 5 cc. of filtered gastric contents in a test-tube. If free hydrochloric acid be present, a blue ring appears where the fluids join. The reaction is quite as delicate as any other clinical test for free hydrochloric acid.

Gastroscopy.—Jackson[7] recommends gastroscopy as the only method known to-day that yields ocular information as to the condition of the gastric mucosa, and describes cases in which he has been able to detect organic disease by its aid. He admits, however, that it is impossible at present to be sure of exploring the whole surface of the stomach, the "explorable area" being confined to the middle third, and as a general anæsthetic is essential for the examination, it is not likely that the instrument will come into general use. Its employment, however, in careful hands, is almost free from risk.

Acute Dilatation.—In an elaborate review of this subject, based upon an analysis of eighty-four cases, Conner[8] comes to the following conclusions :—Acute dilatation of the stomach is a disease of considerable clinical importance, and deserves wider recognition. It develops under a great variety of conditions, but is especially frequent after operations with general anæsthesia. In a majority of the cases there has been an associated dilatation of the duodenum.

The mechanism of acute gastric dilatation is not yet clearly understood, but in a large proportion of cases (perhaps one-half) the dilatation is associated with, and seems to result from, some form of obstruction in the duodenum. Much the commonest cause of such obstruction is the constriction of the lower end of the duodenum between the root of the mesentery, which crosses in front of it, and the vertebral column. Such constriction can occur only when the mesenteric root, with the superior mesenteric artery which runs in it, is stretched tightly across the duodenum ; and this is possible, apparently, only when traction is exerted by the small intestine hanging over the brim of the pelvis. The development of mesenteric constriction is favoured, therefore, by whatever facilitates the entrance of the small intestine into the true pelvis (dorsal decubitus, a mesentery of suitable length, an empty and collapsed state of the gut, etc.), and whatever renders the duodenum more liable to compression (increased lordosis of the lumbar vertebræ, low position of the duodenum, etc.). Great dilatation of the stomach would doubtless increase the liability to mesenteric obstruction by crowding the intestines into the pelvis, and would tend, by preventing the escape of the gut from the pelvis, to render such obstruction, when once formed, more complete and permanent.

Whether the dilatation of the stomach or the mesenteric obstruction of the duodenum constitutes, usually, the first step in the vicious circle by which both conditions are made worse, is still uncertain, but there is little doubt that in some cases, at least, the duodenal obstruction is primary.

The symptoms and physical signs of acute gastric dilatation are usually so distinct that the diagnosis should not be difficult if the possibility of such occurrence be but remembered.

In spite of the high mortality (72 per cent) among the reported cases, there is much evidence to show that the disease can usually be controlled and cured if the diagnosis be made and suitable treatment begun before complete collapse of the patient has occurred.

Gastrostaxis.—Hale White[9] applies this term to cases of hæmatemesis met with (usually in anæmic young women) in which no gross lesion of the mucous membrane of the stomach is found at operation or after death. The cause of the condition is obscure. It is certainly not—as was once believed—vicarious menstruation, nor is there any evidence of venous engorgement to explain it. Further, the patients are by no means all chlorotic. It is in the highest degree improbable that gastrostaxis is the result of erosions and represents the earliest stage of gastric ulcer, for the proportion of women to men who suffer from it is far greater than the proportion who suffer from ulcer. He concludes that we do not know the cause of the oozing of blood in these cases. The prognosis is good. Amongst 7500 post-mortem records at Guy's Hospital, only three showed that death resulted from oozing from the mucous membrane of the stomach.

Diagnosis.—The diagnosis of gastric oozing from most other causes of hæmatemesis, such as that due to cirrhosis, heart disease, or cancer, is easy, but it is often very difficult or impossible to separate these cases from gastric ulcer unless the latter has led to hour-glass stomach, gastric dilatation, tetany, a mass of thickening that can be felt, or a subphrenic abscess; but points that will help are that these cases of gastric oozing of blood are almost confined to women, while a considerable proportion of gastric ulcers are present in men. If the patient has not been starved as a result of treatment, a sufferer from gastric ulcer is more likely to be wasted than one afflicted with gastric oozing, and although some of these give a history of chronic dyspepsia, pain after food, and tenderness over the stomach, yet the occurrence of considerable intervals during which there is no complaint of gastric symptoms is, perhaps, on the whole in favour of gastric oozing, and probably if large numbers of cases could be compared, the dyspeptic symptoms would be found to be less severe in the cases of oozing; but in the present state of our knowledge the diagnosis between the two must sometimes be a matter of considerable difficulty, which, however, is probably less on paper than at the bedside. It may be that future observation will show that hydrochloric acid is more abundant in gastric ulcer.

Treatment.—While the hæmorrhage is actually in progress, and for a short time after it has ceased, the patient should be kept quite quiet in bed, should not be allowed food, but may have some ice to suck. Probably transfusion of normal saline solution is rarely desirable, for it will raise the blood-pressure and so tend to increase the hæmorrhage; but it is conceivable that in an extreme case it might be useful. Ergot should not be given in any form, as it will raise the blood-pressure by a general constriction of the arteries. It is doubtful if adrenalin is of value, being so diluted by the gastric contents, but still from 5 to 10 min. of a 1-1000 solution may be given by the mouth in the hope that its local effect on the gastric vessels may lead to their constriction. It is not absorbed from the gastro-intestinal mucous membrane, so that the harm it would do, if injected subcutaneously, by raising the blood-pressure, will not be experienced. Hale White has often given **Perchloride of Iron** by the mouth for its local hæmostatic effect on the stomach, and sometimes with apparent benefit. Half a drachm of the liquor ferri perchloridi with an equal amount of glycerin forms a concentrated solution which is swallowed easily. The only objection to it is that it appears sometimes to make the patient sick; if it does not, this dose may be repeated frequently. The liquor is better than the tincture, because of the alcohol which this contains. Ten grains of **Calcium Chloride** may be given three times a day in the hope that, by increasing the coagulability of the blood, it may restrain the bleeding. Under treatment such as this it will nearly always stop. If the physician is of opinion that the case is one of gastric oozing, the patient may, after two, three, or four days from the cessation of the hæmorrhage, be fed upon **Milk** in fair quantities—say one and a half or two pints in twenty-four hours, small quantities being given every hour, and the liability to the formation of curds being prevented by peptonizing the milk, or better still by adding two grains of sodium citrate to each ounce of milk. Then if no further bleeding occurs, any plain simple food, such as bread and milk, milk pudding, bread and butter, fish, or minced meat, may be ordered, for these patients do better the sooner they take ordinary food. At the same time some preparation of **Iron**, such as the tartrate or dialysed iron, that does not upset digestion, may be prescribed. Probably an enema will be needed. He has treated many patients in this way lately, and the rapid improvement has been very striking; instead of lingering in the hospital for weeks, many are, on this altered treatment, quite fit to leave the hospital and return to their work in three weeks at the most.

Achylia Gastrica.—Brauner[10] reports on seventeen cases of this disease, eleven males and six females, the ages varying from twenty-one to fifty-nine. None of the patients had any digestive disturbance before the nineteenth year. In addition to absence of hydrochloric acid, rennin is usually greatly reduced, pepsin less so. The defect of secretion may result from nervous influences or altered composition of the blood, but oftenest from diseases of the mucous membrane. After a test breakfast the stomach is either empty, or contains only a small residue. Chronic diarrhœa, or a tendency to it, is the most suggestive symptom of achylia.

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STOMACH, SURGERY OF.

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The most important surgical disease of the stomach is doubtless ulcer, because from it arise, either as complications or as sequels, practically all the other affections of the stomach with which surgery has to deal. Hæmorrhage, perforation, pyloric stenosis, gastric dilatation, hour-glass stomach, and perigastritis—these, with very few exceptions, owe their existence to gastric ulcer. And not only for this reason is ulcer the most important of gastric affections, but from the aspect of gastric therapeutics it is also of paramount interest to the surgeon, because the more experience surgeons gain the more convinced they become that gastric carcinoma, in the vast majority of instances, traces its origin to a pre-existent ulcer ; and they are too sadly aware that cancer of the stomach is best treated by preventing its development.

Ulcer of the Stomach and Duodenum.

Surgery has been so busy with the *treatment* of gastric ulcer, that the subjects of etiology and pathology have been wisely left to our medical confrères. What the nature of gastric ulcer is, remains still undetermined ; we merely know that it appears to be a disease *sui generis*, being neither simply inflammatory, granulomatous, nor yet neoplastic.

The question of *how soon to operate in cases of open ulcers* has not yet been definitely determined. It is certainly proper for medical treatment to be allowed one failure, if not several. The dictum of Leube, so often quoted, that patients who are not cured by medical treatment persisted in for five or six weeks will never be cured by such measures, should be remembered ; but surgery should never be a hasty resort in patients without alarming hæmorrhage or other complications. It is far better for such patients to submit to two or three medical cures in the course of a year or so, than to form even the two or three per cent of deaths in the statistics of the surgeon who would rudely terminate their medical cure by an operation. That there is a mortality in even a large series of the simplest operations for gastric ulcer cannot be denied ; and the judicious surgeon will delay operation until firmly convinced that the risk of persistence in medical treatment exceeds that to be anticipated from operation. While we do not think intelligent surgeons will be much influenced by the Cassandra-like prophesyings of physicians who rake up all the catastrophes of gastric surgery for the past decade, and refer to them as if of frequent and recent occurrence,[1] a prudent conservatism in selecting the cases for operation should by all means be maintained.

That gastro-enterostomy, especially in patients with open ulcer and unobstructed pylorus, is not chiefly, if at all, a mere mechanical remedy, has become more and more appreciated during the last few years. The skiagraphic studies, which show that with unobstructed pylorus the gastro-intestinal anastomosis is sparingly, or not at all, used by the food in its egress from the stomach, have made this perfectly clear. But as Paterson well says,[2] these facts, deduced from experiments in which dogs were fed on bags of shot, are to him of more academic than surgical interest, since he, for one, is " not in the habit of feeding his patients on such indigestible food." For, as he also points out, the result in curing the ulcer is the same, no matter by which route the food escapes. Roux[3] is so impressed with the curative function of the direct action of the bile and the pancreatic juice on gastric ulcer, that since the spring of 1902 he has employed " simple gastro-enterostomy " (i.e. the posterior " no loop " method) in cases of unobstructed pylorus with unhealed ulcer, believing that thus the intestinal secretions are freely admitted to the stomach; while he reserves his own method of operation ("*en*-Y") for patients with pyloric obstruction. Paterson[4] further elaborates this theory of the physiological action of gastro-enterostomy; he thinks that all the good effects of the operation are by no means due merely to the direct chemical neutralization of the gastric hyperacidity; he believes that after gastrojejunostomy, "the early presence of acid in the jejunum will lead to a flow of pancreatic juice at an earlier period of digestion than in a normal individual. With this earlier stimulation of the pancreas there will be a correspondingly earlier diminution of the gastric secretion, and, as a consequence of this, a diminution in the total chlorides secreted by the gastric mucous membrane."

The *Physiological Results of Gastro-enterostomy* have been investigated recently by Katzenstein.[5] As the result of experiments on dogs he ascertained: (1) That after gastro-enterostomy of any kind, both pancreatic juice and bile passed freely into the stomach (from Terrier's classical operation of cholecystogastrostomy we have long known that bile is well tolerated in the stomach); (2) This inflow of alkaline fluid into the stomach was continuous in the early period after operation, but later on the inflow was periodical only; (3) Some months after the operation, pancreatic ferment and bile were demonstrable in the stomach one and a half hours after eating flesh, but after taking fat or water they were found there after half an hour; (4) The results of these changes were diminution of acidity and of pepsin digestion. From these facts, Katzenstein concluded that gastro-enterostomy exerted a curative effect on ulcer by diminishing gastric acidity, and he suggested that the arrest of carcinomatous growth sometimes observed after this operation might be due to the local action of the trypsin of the pancreatic juice. In applying to man any conclusions drawn solely from animal experimentation, we have always felt that great caution should be employed; but, as practically the same course of events has been observed clinically, the conclusions of Katzenstein seem to us worthy of acceptance. Even physicians admit[6] that the metabolism of the body is not materially altered by gastrojejunostomy.

Hæmorrhage from Gastric Ulcer.—The question of operation for acute hæmorrhage from gastric or duodenal ulcer is still a subject of considerable discussion. Our own judgment is decidedly against it, and we think Hale White[7] sums up the matter very well when he says: "If the bleeding from an ulcer is so severe that in spite of all medical treatment the patient dies, I think we ought not to regret having neglected to open the stomach, for the patient would have died in any case, and his chance of recovery would have been lessened by surgical interference." Although we accept with some qualifications Hale White's conclusions in regard to the condition denominated by him "gastrostaxis," we do not at all agree with his premises. This disease, he thinks, is met with chiefly in females under thirty years of age, and for them he thinks operative measures should very exceptionally be adopted. We believe he is right in preferring medical treatment for these patients ; but we incline to the French theory that such hæmorrhages are toxic or septic in origin, and that injection of the gastric vessels post-mortem would very likely have altered the conclusions which Hale White drew from his autopsical studies.

Perforation of Gastric Ulcer is admittedly a surgical disease. The death-rate without operation is over 95 per cent ; Mayo Robson[8] thinks by surgical means it will ultimately be reduced to 5 per cent in cases operated on early, although at the present time about one out of four of those operated on even within twelve hours will die. Moynihan[9] reports twenty-seven consecutive cases of operation for perforation, with nine deaths, but only two deaths among the last fourteen patients. In St. Bartholomew's Hospital from 1897 to 1905 there were operated on, according to Gask,[10] sixty-nine patients with gastric perforation, thirty-four, or 49·2 per cent, dying. Caird[11] has reported twenty-five consecutive operations for gastric or duodenal perforation, with a mortality of 36 per cent (nine deaths). The fact that in Caird's statistics a lower mortality (20 per cent) followed the five operations done from twenty-five to fifty-one hours after the occurrence of perforation, than was present after the seven operations done within twelve hours, is not significant, since the figures involved are too small, and since more extensive statistics accentuate the importance of immediate operation. We earnestly counsel against waiting for any shock to disappear. The surest way to hasten its disappearance is to open the peritoneum and restore an equable intra-abdominal pressure.

As to whether **Gastro-enterostomy** shall be done in cases of gastric perforation, surgical opinion is still divided. It is our own conviction that this additional operation is to be advocated in all cases except where there is purulent peritonitis ; and cases of acute perforation very rarely present this condition. It has been well said that the time spent in looking for a second perforation will be a pure waste in four out of five cases, and would be much better employed in doing gastro-enterostomy. And, although we are supported in this view by many surgeons of experience, yet we do not ignore the fact that Hale White has said :[12] "Judging from our results at Guy's Hospital it appears that patients who survive an operation for perforated gastric ulcer do so well that a gastrojejunostomy is quite unnecessary." Gask[13] gave the results from Guy's Hospital to which Hale White referred ; he traced eighteen cases, and was able to place them in two very clear groups : (1) Those who remained perfectly well, fifteen cases ; and (2) Those who suffered from dragging and other pains, from adhesions, etc., only three cases. "Those who did badly, did very badly, and were not relieved by subsequent gastrojejunostomy. Those who did well, did very well ; and as 83 per cent did so well, he thought that it was contra-indicated to perform gastrojejunostomy at the time of suturing the perforated ulcer."

Subacute Perforation of the stomach and duodenum has again been discussed by Moynihan.[14] He reports fifteen personal operations for this condition, with one death. As causes of subacute, rather than of acute perforation, he has encountered the following factors: (1) An empty condition of the stomach, when the extravasation is very limited, and a vigorous and effective defence is made by the peritoneum; (2) The plugging of the perforation by a tag of omentum, of which one example was encountered; (3) Sealing of the opening by plastic lymph; (4) Adhesions of the base of the ulcer to neighbouring structures. This last form of subacute perforation, as described by Moynihan, really constitutes a so-called chronic perforation. The chief interest in cases of subacute perforation is confined to the technique of operation, since the symptomatology and diagnosis offer nothing particularly novel. Granted that operation be done, shall it consist in suture of the ulcer alone; shall gastro-enterostomy also be done, or shall the ulcer be left undisturbed, and the short-circuiting operation alone be employed? For some years we have advocated and practised **Gastro-enterostomy** without disturbing the adhesions surrounding the ulcer, believing that in the majority of cases the barriers which nature has erected around the lesions are safer than those which the surgeon's art can establish. Recently Lund[15] has expressed similar views, and Moynihan quotes his advice with approval. As has been more especially pointed out by the French surgeons, most of these subacute perforations occur close to the lesser curvature of the stomach, in locations where efficient suture may be extremely difficult, if not impossible; and the incautious rupture of these limiting adhesions may even uncover a perforation which, passing unperceived during the operation, will subsequently cause death from peritonitis. Of course, if the perforation is on the anterior wall and readily accessible, or if the existing adhesions interfere markedly with gastric motility, no hesitation should be felt in performing **Gastrolysis,** which still, in selected cases, must be considered a proper operation. Gastro-enterostomy should also be done unless positively contra-indicated.

Duodenal Ulcer.—W. J. Mayo[16] explains the apparent increase in the proportion of duodenal to gastric ulcer, by the fact that a more accurate anatomical classification is now adopted. Formerly, all ulcers about the pylorus were classified as pyloric, and therefore gastric; and "as 95 per cent of all duodenal ulcers extended up to the pylorus or within ¾ in. of it, and adhesions more or less obscured the field, the facts were but slowly brought forward." Dr. Mayo proceeds: "In searching for the pylorus in the adherent cases the arrangement of the blood-vessels is the best guide. Close to the gastric side of the pyloric ring will be found a vein extending from the inferior surface upwards anteriorly fully half-way across the pyloric end of the stomach; from the superior border another vein, less prominent but regularly placed, extends downward in the same line." This line he considers the boundary between stomach and duodenum.

This fine distinction between gastric and duodenal ulcer seems to us of more theoretical than practical importance, since ulcers in the first part of the duodenum so closely resemble those of the stomach in clinical pathology, symptomatology, and indications for treatment, that a differentiation is rarely important. Mayo reports 188 operations for duodenal ulcer, with 7 deaths, a mortality of 3·7 per cent, which was thus distributed—175 operations for chronic ulcer, with 2 deaths: 10 for acute perforation, with 4 deaths; and 3 for repeated acute hæmorrhages, with one death. He was able to trace 103 patients to ascertain the ultimate results: of these, 93 were cured, or considered themselves practically well; 8 were unimproved (some after temporary improvement); and only 2 were reported worse.

In discussing this address of Mayo, Murphy called attention to the fact, "that an important point has been generally omitted from the anatomical description of the first part of the jejunum. In the process of development of the intestinal tract, it often happens that a loop of jejunum is left behind the peritoneum. This extends as low as the brim of the pelvis, and then passing backwards and upwards enters the peritoneal cavity through its posterior wall, just below the level at which the duodenum passes across the aorta." Murphy suggests that this "sigmoid curve of the jejunum," which he has recently encountered once in every three cases, "may have as baneful an influence in posterior gastro-enterostomy as the long surgical loop which was formerly made use of."

Mayo Robson[17], in his Hunterian Lecture, calls attention to the relative frequency of duodenal and gastric ulcer, and states that the real proportion is as one to two, or thereabout. In his personal experience 86 per cent of duodenal ulcers have been in males, and only 14 per cent in females. Mayo found the proportion to be 73 per cent male and 27 per cent female. In operating for perforated duodenal ulcer, Robson thinks that, as a rule, gastro-enterostomy is not to be advised. He prefers to do this operation at a subsequent period, if it proves necessary. He collected all the cases of operation for acute perforating duodenal ulcer that he could find recorded—155 operations all told; of these 52 recovered and 103 died, a mortality of 66 per cent. Sixty-one were operated on within twenty-four hours of perforation, with a mortality of 37·7 per cent; and 63 after a period of twenty-four hours, with a mortality of 82·5 per cent. "Of the remaining 31 cases, in which the time of operation was not stated, but in which the time was probably over twenty-four hours after rupture, three recovered and 28 died—a mortality of 90·3 per cent."

PYLORIC STENOSIS.

We are so accustomed to thinking of gastric ulcer as the only cause of benign stenosis of pylorus, that other factors are of interest. Mansell Moullin[18] has recently had a series of seven cases in which no evidence of ulcer, either present or past, was detected. The stricture seemed to be due to fibroid thickening, and was successfully relieved by **Finney's Operation,** of which Moullin is a well-known advocate. If this operation be adopted at all, it is certainly more suitable for such cases as those encountered by Moullin than for ordinary cases of pyloric stenosis, in which inflammatory thickening of the pylorus or perigastric adhesions render any form of pyloroplasty difficult and unsatisfactory. It has long been our teaching that Finney's operation should be limited to cases without much pyloric thickening or adhesions, and with good gastric motility; and further experience and study of the recent reports of this operation have not made us alter our opinion. Cases similar in nature to those discussed by Moullin are reported by Lambert and Foster.[19]

Adams[20] operated on a patient with obstruction of the pylorus which was found to be caused by a supplementary lobe of the liver. This was successfully amputated, and the patient rapidly restored to normal health. He refers to similar cases operated on by Langenbuch, Martin, Bastianelli, and Lockwood. Treves, and likewise Rolleston, advise against excision of the lobe, if any other cause be found for the symptoms, such as gall-stones or perigastric adhesions. Billroth and Techerning sutured the abnormal lobe to the abdominal wall. In Terrier's patient the symptoms were much ameliorated by removal of gall-stones without any treatment of the hepatic lobe, and in seven patients referred to by Terrier and Auvray, proper operative treatment of the underlying condition caused the tonguelike lobe to disappear.

Excision v. *Gastro-enterostomy for Benign Stenosis of the Pylorus.*—The advocates of excision of benign ulcers urge the danger of perforation, or hæmorrhage, or the development of carcinoma subsequent to gastro-enterostomy, as reasons for preferring excision. An important article has been contributed to this discussion by Bréchot,[21] who advocates **Pylorectomy** instead of **Gastro-enterostomy** in benign obstruction of the pylorus. He reports thirty-two cases of pylorectomy for benign disease, by various French surgeons, with three deaths, a mortality of 9·4 per cent. Individual operators have had a considerably lower mortality. But the facts remain: that (1) The immediate mortality of excision is higher, being 7 to 10 per cent instead of 1 to 3 per cent, even in experienced hands; that (2) Gastric ulcers are frequently multiple, and while one or two may be removed, others are almost invariably overlooked; that (3) Even should all the existing ulcers be readily discoverable, their removal may be impossible without performing a gastrectomy of prohibitory extent; that (4) After excision of the suspected ulcer, or ulcers, fatal perforation and hæmorrhage have occurred from ulcers which were left; and, finally, the question of the line to be drawn between benign and malignant affections of the stomach cannot at the present time be answered definitely by microscopical studies alone. It seems fair to conclude that many of the patients subjected to excision for supposedly benign disease, which yet was found on microscopical examination to be in a very early stage of "malignant degeneration," would have been at least as thoroughly cured by a palliative operation, as have been those by no means innumerable patients who presented a gastric tumour, which was considered clinical evidence of malignant disease too far advanced to be treated otherwse than by a palliative operation. Such cases, however, have been noted by Bidwell, Eiselsberg, Pantzer, Wallis, Tuffier, Robson, and many others.

We have spoken of Bréchot's article as important; and it is so, not only because of its size (84 pages, extending through three numbers of the *Revue de Chirurgie*), but because those surgeons who take time only to read an author's conclusions, or who agree with everything plausible set before them, will be very prone to be influenced by his statements. We have been at some pains to examine this paper, and beg to call attention to some of its contents. Bréchot commences by insisting on the importance of the normal physiology of the duodenum; we grant its importance. He then asserts that exclusion of the duodenum as effected by gastro-enterostomy materially impairs the digestive functions; this we deny, and as he brings forward no facts of value sufficient to support his assertion, it is, perhaps, unnecessary to call attention again to observations which prove the opposite. (Cf. Hale White, *supra.*) Bréchot divides organic stenosis into: (1) Those forms caused by kinking, by pylorospasm without obvious cause, and fibrous stricture; and (2) Those forms caused by benign tumours, or ulceration and its products. For the first class, he says the proper operation is restoration of the gastro-duodenal canal; we agree with him. For the second, he asserts excision should be done; in the case of benign tumours we think he is right, for modern experience goes to show that few such tumours are clinically really benign; but in the case of stenosis from ulceration, we still think that gastro-enterostomy is to be preferred in all but exceptional cases. After again stating the dangers of persistent hæmorrhage and subsequent perforation after gastro-enterostomy, he urges the danger of carcinomatous implantation. In regard to hæmorrhage and perforation, it may be said that the cases which have been observed are far too few in proportion to the total number of operations performed to make these late results worthy of such serious consideration; and, in regard to carcinoma, it may justly be urged that gastro-enterostomy *does* cure the ulcers, and thus prevent the development of carcinoma. After rehearsing all the failures after gastro-enterostomy, such as the vicious circle, internal hernia, volvulus, and peptic ulcer of the jejunum (all of which are things of the past), Bréchot closes his remarkable essay by giving us some statistics and case histories, which he claims are the justification of his conclusions. As recent statistics, he refers to sixty-two gastro-enterostomies by v. Eiselsberg (reported by Clairmont) with ten deaths, a mortality of 16·1 per cent; and opposes to these lugubrious figures a record of eight pylorectomies by the same surgeon, with two deaths; but when he perceives that the latter mortality is 25 per cent, he hastily states that the figures involved are too small to be significant. Then he tabulates thirty-one case histories, in which operations are recorded, there being four immediate and two remote deaths (13 per cent mortality at least); and among the twenty-five who recovered from pylorectomy, only four are reported as permanently cured, and in most of these no date is given as to the duration of the post-operative history. Seventeen patients were not traced at all, and four were not cured by the operations employed. These case histories, says Bréchot, prove "the necessity of resection of the ulcer, and the simultaneous establishment of the gastro-intestinal canal." Let any candid reader compare these records of pylorectomy for benign disease with those of gastro-enterostomy for the same condition.

Hour-Glass Stomach.

Moynihan's oft-repeated assertion that he has failed to substantiate the congenital origin of any of the cases of hour-glass stomach commonly reported under that title, has become so fixed in surgeons' minds, that it is somewhat of a surprise that Barnabo[22] should record as "congenital" 61, or 27·11 per cent of the 235 cases he analyzes. Of the acquired variety [143 (63·55 per cent)] he found 88 (59·44 per cent) due to gastric ulcer, 1 (0·67 per cent) to caustics, 6 (4·19 per cent) due to malignant tumours, 2 (1·34 per cent) to spasm, 32 (18·18 per cent) to perigastritis of various forms, 4 (2·68 per cent) to splanchnoptosis, 19 (13·28 per cent) to unrecorded causes; while in 22 (9·33 per cent) it was not recorded whether the hour-glass constriction was of congenital or acquired cause. His researches evidently have not included all the cases, since three years ago Schomerus[23] recorded 10 cases of hour-glass stomach due to malignant disease which had been treated by operation, in addition to 138 operations of various kinds for this affection due to benign disease. The greatest number (52) of cases were operations of gastro-enterostomy, with a mortality of a little over 11 per cent; there were 47 gastroplasties, with a slightly lower mortality; but as recurrence of symptoms occurs in about

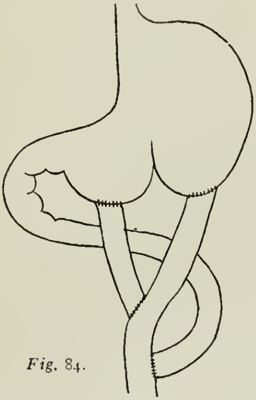

Fig. 84.

Operation proposed by Monprofit.

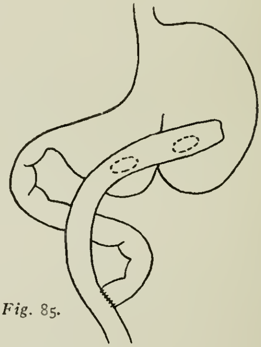

Fig. 85.

Operation employed by Clément, of Fribourg

25 per cent of patients after gastroplasty, **Gastro-enterostomy** is usually to be preferred. Monprofit[24] has proposed a modification of the gastro-enterostomy of Roux, by which each pouch of the sacculated stomach shall be drained directly. The accompanying illustration (*Fig.* 84) shows his method, which appears to us more complicated and no more likely to be successful than that employed by Clément, of Fribourg (*Fig.* 85). Indeed, it is questionable to our minds whether such operations are ever desirable. It has been our practice, and we have found it quite satisfactory, to employ gastrogastrostomy combined with posterior gastro-enterostomy. Bakes is quoted[25] as having employed an anterior gastro-enterostomy to each sac of an hour-glass stomach, the afferent and efferent jejunal loops being anastomosed as in Braun's operation.

Paterson[26] has added another case to the short list of trifid or double hour-glass stomachs. In his patient gastroplasty was employed to connect the pouches, and gastro-enterostomy was done in the pyloric pouch, which was much the largest of the three. The patient was in good health when examined nearly two years later. Kausch[27] and Schmitt[28] have each recorded a case of trifid stomach.

GASTRIC CARCINOMA.

Recent opinion inclines to the belief that a majority of cases of gastric cancer arise from a pre-existing ulcer. Moynihan[29] noted a history of gastric ulcer, or chronic indigestion, in twenty-seven out of forty-five patients with cancer of the stomach (60 per cent). Mumford and Stone[30] traced sixty patients who had been treated for chronic indigestion, and who subsequently died. Half of them died of cancer of the stomach. These authors further found that forty-one out of fifty patients with gastric carcinoma gave a clear history of long-continued gastric disturbance, mostly due to ulcer. Mayo[31] found such a history in 36 per cent of his patients with gastric cancer. Other statistics might be quoted ; they would merely emphasize the fact that *chronic gastric dyspepsia is the chief predisposing cause of cancer of the stomach.*

Every one knows that cancer cannot be cured by medical means, and that it is not easily cured by surgery. From these facts arises the need of preventing gastric cancer by all means in our power, rather than awaiting its development, and then attempting to cure it. This is a plain argument in favour of the surgical and permanent cure of gastric ulcer, pyloric stenosis, etc. As surgical treatment cannot always be adopted in what may be called the precancerous stage, it becomes important to recognize the very earliest symptoms of gastric carcinoma. In a small proportion of cases these symptoms develop rapidly, without a history of previous long-continued indigestion. Mansell Moullin[32] attempts to point out the methods by which a diagnosis in these cases is to be made. He says, " The first thing to attract the patients' attention was nearly always either an alteration in the appetite or pain. . . . In most there was a distaste for meat and all rich articles of diet. In some the distaste was general. There was complete loss of appetite; no wish or desire for food, even a loathing of it, though previously the appetite had been normal. . . . Exercise, cold, and change of air made little or no difference. There was no definite evidence of gastritis, though most suffered from flatulence, and one or two used to vomit a little mucus; there was simply no wish to eat, and an utter distaste for food. Then, very soon, loss of strength and energy followed, and, in those who kept a record, loss of weight as well." He goes on to point out the importance of strict attention to the clinical history and the physical symptoms, since laboratory tests at this early stage of the disease show nothing characteristic. If these tests are positive, they are confirmative; but if they are negative, they should be utterly disregarded. Exploratory laparotomy is less unjustifiable in gastric cancer than in any other non-inflammatory disease.

The immediate mortality of excisions for gastric cancer is the next question of importance. These have been thus tabulated by Deaver: [33]

PARTIAL GASTRECTOMY FOR CARCINOMA.

Operator	Cases	Deaths	Mortality per cent
Mayo	81 (25)	12 (1)	14·15 (4)
Kocher . .	110 (58)	27 (9)	24·5 (15)
Mikulicz . .	100	37	37·0
Maydl . .	25	4	16·0
Krönlein . .	50	14	28·0
Roux . . .	39	13	33·0
Meyer . .	5	1	20·0
Kappeler . .	30	8	26·6
Garré . .	26	7	26·9
Hartmann . .	22	7	31·8
Moynihan . .	9	2	22·2
Paterson . .	4	1	25·0

This gives a total of 393 partial gastrectomies, with 104 deaths, a mortality of 26·5 per cent. Mayo's latest statistics show a mortality of 11·45 per cent; and Deaver's show a mortality of 11·11 per cent. Czerny's mortality for the season of 1904–5, quoted by Kausch, [34] was 17 per cent; and Mayo Robson's for the period of 1896–1906, was 16 per cent. Thus, it is evident that gastrectomy is no trifling operation, and should not, in our judgment, be habitually employed for benign diseases.

The remote results of **Gastrectomy** for carcinoma have been carefully investigated by Kausch. [35] The average duration of life after operation was 18·3 months in Mikulicz's patients; in Kocher's patients it was 18·7 months; and in Krönlein's, 18 months. Deaver [36] quotes Paterson's figures, from collective statistics, as follows: The duration of life after operation (86 operations in all) was an average of 19 months after total gastrectomy (17 patients); of 22½ months after subtotal gastrectomy (14 patients) ; and of just over 2 years after partial gastrectomy (55 patients). Now if these patients had not been operated on, the duration of life *from the beginning of the disease* (not only from the date of operation) would have been at most one year, probably less. Thus, as pointed out by Deaver, not only is life considerably prolonged, but at the end of this period a number of patients are still living and in good health, whereas if no operation had been done they would all of them have been dead before this time was reached. The question next arises, what proportion of patients will be living and well at the end, say, of three years ; and how many may hope to be permanently cured ? Deaver shows that we may expect about 10 or 15 per cent of patients treated by gastrectomy to be permanently cured without liability of recurrence. Leriche[37] quotes the reckoning of Petersen and Colmers that one-fifth of those that survive the resection will be permanently cured. According to Kausch, Makkas traced ninety-two of Mikulicz's patients who had been operated on before 1902. He found twenty-seven (30 per cent of those operated on) of these still in good health ; of these seventeen were well more than three years after operation—which number represented 14·3 per cent of the whole number operated on, and 23·9 per cent of those who recovered after operation. Petersen and Colmers traced eighteen patients, and found that six were alive and well three years or more after operation—being 20 per cent of the whole number operated on, and 33 per cent of those who survived operation. These various figures may be seen in the annexed table, from Kausch :

GASTRECTOMY FOR CARCINOMA.

Operator.	Cases without recurrence after 3 years.		
	No. of Patients.	Percent. of whole number operated on.	Percent. of those who survived operation.
Czerny	6	20	33
Mikulicz	17	14	24
Mayo Robson (4 yrs. after op.)	—	14	—
Kocher	8	9	—
Krönlein	2	7	10

Last year Paterson[38] collected, mainly from British sources, the end results of seventy-nine cases of gastrectomy, thirty-three (41·6 per cent) of whom were free from recurrence three years or more after operation. Leriche,[39] still more recently, has collected records of eighty-nine patients treated by gastrectomy, who were traced and found in good health three years or more after operation ; of these, no less than thirty-four had been traced for from five to ten years after operation. Boas (cited by Kausch) diagnosed sixty cases of gastric cancer within three months of the appearance of first symptoms. He found that of these, only three (5 per cent) could be treated by resection ; thirteen were suitable for gastro-enterostomy ; and two could only be explored. Of 127 cases diagnosed within six months of the appearance of first symptoms, Boas found only eight (6·3 per cent) suitable subjects for resection. From this experience Boas came to the conclusion that the early diagnosis of gastric cancer is at present usually impossible ; that the constant moan of surgery, that patients are not sent early enough for operation, is not warranted by the facts ; and that those patients who encounter the question of operability more than six months after the first onset of symptoms, afford a greater hope of radical cure than the earlier cases. But Hoffmann, in Mikulicz's clinique, found that of 117 cases diagnosed within three months of onset, twenty-four (20·8 per cent) could be treated by resection ; and of 193 cases whose first symptoms dated back six months to one year, he found that fifty-eight (30·3 per cent) could be treated by resection. This discrepancy between the surgical and medical statistics is not because Mikulicz allowed wider limits to the indications for radical operation ; but because the worst cases go to the physician, and the more operable ones go direct to the surgeon. Moreover, the patients seen by medical men are either hospital out-patients, or those in private practice—the number is great, but the patients do not remain long under observation ; they pass on to another clinique. The following table, from Kausch, gives the total number of cases under observation ; the total number of operations, with the relation of these to the whole number of patients ; and the number of radical operations done, with the relation of these to the whole number of patients :—

Ratio of Operable Cases to Whole Number of Patients.

Author.	Total Cases.	Whole No. of Ops. including Explorations.	Ratio to Whole No. of Patients.	No of Resections.	Ratio to Whole No. of Patients.
Boas ..	234	48	20·5 %	11	4·7 %
Krönlein ..	264	197	75·0 %	50	19·0 %
Mikulicz	665 (of whom 59 refused operation) =606	458	69·0 % 75·0 %	164	24·7 % 27·0 %
Körte	126	115	91·0 %	38	30·0 %

Lymphatics of the Stomach.—Jamieson and Dobson[40] report their studies on the distribution of the lymphatic channels of the stomach and their collecting glands. While their observations invalidate those of Cuneo in some anatomical details, the practical lessons to be drawn from Cuneo's classic researches, and Hartmann's clinical adaptation of the same, are in no way affected. Thus, while Cuneo found that glands beneath the pylorus were very unusual, Jamieson and Dobson found them quite frequently present, thus confirming the observations of Lengemann, who noted their presence in 60 per cent of the stomachs examined. But Cuneo's conclusions that removal of these glands is rarely necessary, is paralleled by Jamieson and Dobson's assertion that their removal would be extremely difficult, if not impossible, and is probably very rarely accomplished. And, while Cuneo thought that the pylorus and the whole of the lesser curvature drained into the lower coronary group of glands, as they are named by Jamieson and Dobson, these writers found that in not a few instances lymph channels may be traced which pass from the pylorus directly past these glands, and empty into the right suprapancreatic glands lying along the trunk of the hepatic artery. From their studies, therefore, they reach the somewhat disheartening conclusion, that " except as a mere matter of chance, no operation for gastric carcinoma can be a radical one when once malignant emboli have commenced to reach the lymphatic glands. The only reason," they add, " for removing as many of the diseased glands as possible, is the hope that once the primary growth and the majority of the affected glands have been removed, the remaining glands may be able to deal with, and, perhaps, destroy, the malignant elements they contain ; of this process, however, we know little or nothing." We do not think, however, that this doctrine of despondency should make the surgeon hesitate to perform radical operations for gastric carcinoma, on the plan originally laid down by the theory of Cuneo and the practice of Hartmann.

SARCOMA OF STOMACH.

McCormick and Welsh,[41] of Sydney, contribute an interesting paper on this subject, including the report of three original cases, and a tabulation of forty-five cases of gastric sarcoma. Two of their own patients were treated by operation, with recovery. In the first case, the growth was removed by resecting the posterior gastric wall from which it sprang ; but in the second patient it was found necessary to do a subtotal gastrectomy, including a resection of the entire transverse colon, which was adherent to the neoplasm. They are of the opinion that " it is improbable that the total number of properly-authenticated instances of primary gastric sarcoma exceeds sixty." They quote Corner and Fairbank (1905) as referring to fifteen instances of gastrectomy for this disease, with twelve recoveries. McCormick and Welsh think the prognosis is better in spindle-cell growths than in others.

Yates[42] reports four cases of gastric sarcoma operated on by Ochsner ; also one case of myoma of the stomach. One death occurred in the resections for sarcoma, on the twenty-seventh day after operation. From a study of the literature, he found that round-cell sarcoma forms 28 to 45 per cent of the cases, the spindle-cell variety occurring in 32 to 36 per cent, and the lymphosarcoma in 15 to 35 per cent of cases. " The cardiac end is more or less involved in 6 per cent, the fundus in 58 per cent, and the pylorus in 36 per cent (carcinoma 60 per cent), with but 9 per cent of these producing pyloric obstruction. About one-third are more or less diffuse." He found that metastasis was noted in 70 per cent of the round-cell sarcomata and lymphosarcomata ; and in less than 50 per cent of the spindle-cell variety. He thinks it is true that the clinical history closely resembles that of gastric cancer, with the exception that there is no history of long-standing dyspepsia, which is so frequent in the latter disease. Without operation the average duration of life is "fifteen to eighteen months for the round-cell, and twenty-four to thirty-two months for the spindle-cell forms, both distinctly longer than carcinoma."

GASTROSTOMY.

As a further development of Tavel's method of gastrostomy (exclusion of a segment of jejunum and attaching its anal end to the stomach and its duodenal end to the abdominal wall), Roux, of Lausanne,[43] has planned and executed the following procedure in a child with benign œsophageal stricture, which suddenly became impassable, and threatened death from starvation: Selecting a portion of the jejunum provided with a long mesentery, he divided the bowel in two places far enough apart to allow of the intervening portion reaching from the stomach to the patient's neck (*Fig.* 86). He then re-established the intestinal canal by means of a Murphy button, and withdrew the excluded segment of jejunum from the abdomen, after detaching only the upper two-thirds or so of its mesentery. Owing to the anatomical distribution of the blood-vessels in this region, this is quite easily accomplished (*Fig.* 87). After implanting the distal end of the excluded jejunal loop into the anterior wall of the stomach (*Fig.* 88), the patient was fed through the opening thus made, before the

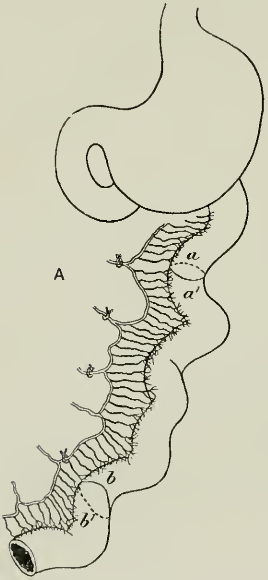

Fig.. 86.—Roux's method of Gastrostomy in a case of œsophageal stricture. The bowel is divided, at *a* and *b*.

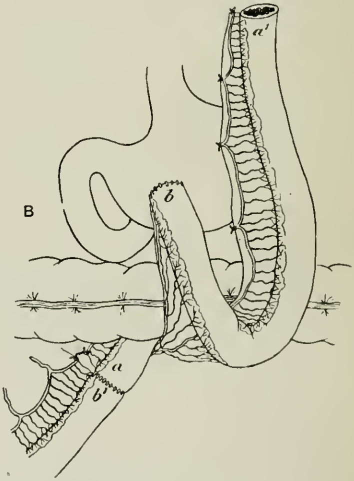

Fig. 87.—Roux's Operation. The bowel joined by a Murphy button at *a* and b^1:

subsequent steps of the operation were undertaken. A subcutaneous channel was next made from the upper angle of the abdominal wound at the ensiform, to the upper sternal region (*Fig.* 89), and the loop of jejunum was carefully drawn up through this channel (*Fig.* 90), and its upper end sutured to the skin (*Fig.* 91). The arterioles in the gut thus transplanted continued to beat normally. A stomach-tube was passed down through the bowel from the neck into the stomach, and allowed to remain in place for several days, to facilitate feeding while the bowel acquired firm attachments in its new situation. The

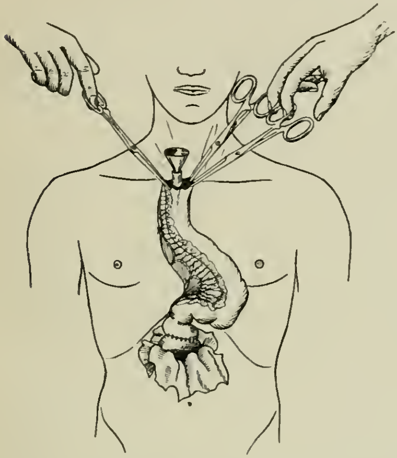

Fig. 88.—Roux's Operation. The excluded loop implanted into stomach, enabling the child to be fed before the succeeding steps are taken.

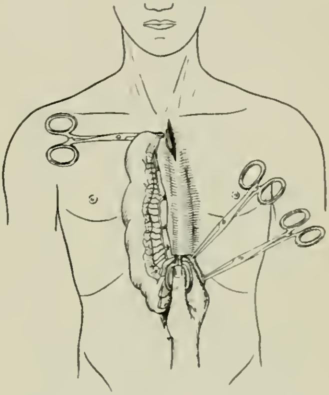

Fig. 89.—Roux's Operation. A subcutaneous channel made to the upper sternal region.

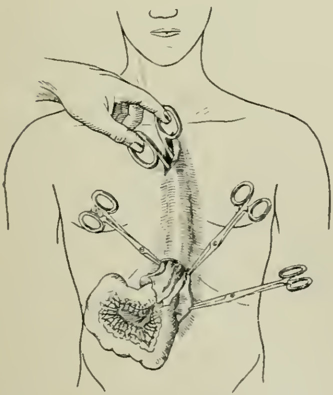

Fig. 90.—The loop of intestine drawn through the channel.

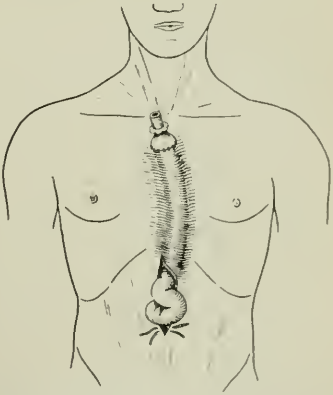

Fig. 91.—The upper end of the loop sutured to the skin.

progress of the case was uneventful. The child was ready to be up when the case was reported. Only a little mucus was exuded from the fistula in the neck, and no gastric regurgitation was ever observed. Peristaltic action seemed to be preserved. "When a bolus of food was placed in the jejunal orifice, as for example a chocolate-drop, it could be seen to descend quite rapidly and disappear in the abdomen, to the great satisfaction of the patient, who appeared to accommodate himself better to solids than to the soups with which he was at first fed through the tube."

The operation as planned was to be concluded at a second sitting, in which the œsophagus above the stricture was to be united to the jejunal fistula. This would have been done at the time of the original operation, except that the latter had been undertaken for acute obstruction of the previously permeable stricture, and it was not thought wise to open the œsophagus while it was still acutely inflamed.

Gastrostomy for certain forms of peritonitis, in which gastric dilatation is a prominent feature, has been advocated by Jaboulay, of Lyons. Gauthier and Pinatelle[44] report three patients on whom they have performed this operation. Two recovered; but from the evidence submitted, it is not altogether clear, we think, that the operation can be considered the main cause of this fortunate result. We have seen many cases of peritonitis; and we are firm believers in the old operation of enterotomy—Nélaton's operation—in certain cases of intestinal obstruction: but we do not recall having ever seen a patient with intestinal obstruction, or peritonitis, in whom gastrostomy seemed to be indicated.

ACUTE DILATATION OF THE STOMACH.

A case of this nature is reported by Lichtenstein[45] under the title of arterio-mesenteric occlusion of the duodenum. The condition developed soon after an ovariotomy; the abdomen was reopened for supposed intestinal obstruction, and two loops of bowel which seemed to be twisted, were untwisted; but the true lesion was not found until autopsy. Whatever the cause, it is fairly well established that acute gastric dilatation is the chief clinical manifestation, and it seems well to retain this term until one can be selected which is more truly scientific. Seelig[46] reported a similar case, also post-operative. The true condition was promptly recognized, and relieved by raising the foot of the bed very high in the air. Symptoms began again whenever the bed was lowered. After persistence in this position for four days, the horizontal posture could be safely resumed, and recovery ensued. Seelig suggests as a cause, that the tight application of an abdominal binder produces a sort of hour-glass-shaped abdomen; that thus, as the intestines work their way into the pelvis by peristaltic action, they are unable to get up again past the barrier formed by the tight binder; and that being crowded down into the pelvis, the mesentery becomes taut and so occludes the duodenum. Finney,[47] in discussing acute gastric dilatation, narrates the history of a diabetic patient operated on by another surgeon, by **Gastrostomy**, with complete relief of symptoms, though death occurred from diabetic coma a week after operation.

VOLVULUS OF THE STOMACH.

Neumann[48] reports one of these rare cases. In his patient the rotation took place around an axis in the frontal plane transverse to the patient's body, and in the direction of an advancing wheel—that is to say, the greater curvature and the transverse colon travelled backwards and then upwards, while the lesser curvature came forwards and downwards. The volvulus was successfully reduced by laparotomy. In our forthcoming work on "The Surgery of the Upper Abdomen," we will tabulate seven cases in which operation has been resorted to for gastric volvulus. Five patients recovered and two died. There appear to be on record a total of twelve cases of this condition. None recovered without operation.

GUNSHOT WOUNDS OF THE STOMACH.

Walton Martin, of New York,[49] collected twenty-five recent operations, including two of his own. Six patients died, a mortality of less than 25 per cent. Following Forgue and Jeanbrau, he lays stress on the situation of the stomach, surrounded by liver, diaphragm, heart, lung, colon, spleen, and pancreas, as explaining the rarity of uncomplicated wounds. Among a hundred and twenty-six cases of gunshot wounds of the stomach studied by the authors above named, only in thirty-two patients was there no associated injury. The mortality in this series of cases varied from 42 per cent for the uncomplicated cases to 68 per cent for those complicated by other visceral injuries. These statistics included many rather ancient cases, all of them reported before 1903; so that Martin thinks the mortality of 25 per cent in his own series of cases, all of them reported since that date, is more accurately representative of modern results. He proposes as an aid in determining the existence of a wound of exit in the posterior gastric wall, to inject the stomach with normal saline solution through the anterior perforation, and to look for the appearance of this fluid in the lesser peritoneal cavity through an opening made in the gastrocolic omentum. We cannot but think that even should such a method be adopted, it would not be apt to give as positive results as direct inspection of the posterior gastric wall, which is not usually a very difficult feat to accomplish. Indeed, even should the posterior perforation not be found, a fatal termination is not necessarily to be anticipated, and Martin himself admits that the failure "to suture the bullet-hole in the posterior wall of the stomach has not materially influenced the mortality." He advocates drainage of the pleura, by thoracotomy, in most cases where the diaphragm is wounded; a pneumothorax is unavoidably established through the diaphragmatic wound as soon as the abdomen is opened, and we think with him that it is better to drain the pleural cavity from the outset in the majority of cases.

PERFORATION OF JEJUNAL ULCER AFTER GASTRO-ENTEROSTOMY.

Edington[50] adds one more case of perforation to the thirty-one cases of peptic jejunal ulcer collected last year by Gosset. This last patient had been operated on seven years previously by anterior gastrojejunostomy. Laparotomy was done twenty-seven hours after perforation, but the patient died in collapse three and a half hours later.

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SUTURES.

Priestley Leech, M.D., F.R.C.S.

Metallic Sutures.—Leedham-Green[1] has been experimenting on the antiseptic action of metallic sutures. The results showed that gold, platinum, tin, aluminium, magnesium, and nickel had practically no inhibitory power over the growth of micro-organisms. Lead and silver had no action, save that when weak cultures were used they showed a slight inhibitory action. Iron exhibited a variable action, dependent on whether oxidation were favoured or hindered. If no oxidation took place, no inhibitory action could be detected; when, on the other hand, there was free oxidation, the inhibitory action was decided. By far the most powerful of the metals bactericidally was copper, and in a less degree (according to the percentage of copper used in their composition) its alloys, bronze and brass. On the Continent bronze wire has largely supplanted silver as a suture material, and is used in the form of aluminium bronze (copper 95 parts, aluminium 5 parts). This wire far surpasses silver in tenacity and pliability, and is unirritating to the tissues. It is, however, too soft to be used in the form of screws or nails for bone suture. For this purpose Leedham-Green has lately been employing a true bronze (i.e., a mixture of copper and tin), which has the requisite hardness, does not irritate the tissues, and is equally powerful as a permanent antiseptic agent. He has been particularly struck with the value of permanent antiseptic sutures, such as bronze, in the fixing together of bone fragments where the wound is already infected, e.g., in certain compound fractures.

Preparation of Catgut.—Peyton Beale[2] has used the method of preparing catgut described by Everett,[3] and says it is efficient and simple ; it can be used either for plain or chromicized catgut, and the strength is not impaired. The raw catgut, after its strength has been carefully tested, is rubbed over with a swab soaked in methylated ether to remove fat or other impurities. It is then wound on a microscope slide, only one layer being put upon each slide, and immersed in a 1 per cent solution of iodine in methyl alcohol. It is left in this solution from one to three days, according to the thickness of the strands, after which it is quite sterile ; it is convenient to leave it for a week, as the strength of the catgut is not impaired. The catgut is then removed from the solution, each slide is wrapped in two layers of sterilized filtering paper, and the whole stored in a dry place. When required for use the paper wrappings are removed by forceps, and the catgut dropped into lotion. If plain catgut is being used it is better to place it in methylated spirit, or some spirit lotion, as a watery lotion causes swelling of the strands, and makes them weaker. Chromicized catgut prepared in this way will remain firm and unabsorbed for at least eighteen days ; the plain gut for at least six days.

Scott Riddell[4] describes a similar method of preparing iodine-spirit catgut. Catgut prepared in this manner has stood bacteriological tests in the laboratory, and has also given good results clinically in over one thousand operations. The method he used is one described by Salkindsohn. The solution is tincture of iodine 1 part, proof spirit 15 parts. The catgut should be immersed for eight days before using. It is wound on glass spools, and it is well to add fresh iodine-spirit solution after two or three weeks, to ensure that there is always an excess of iodine bathing the catgut.

Blake, of Brooklyn,[5] has tried Credé's silverized catgut both bacteriologically and clinically. It appears to be little, if at all, inferior in strength and resisting qualities to chromicized catgut, and is very markedly superior to plain sterilized catgut in both these qualities. Four coils of catgut, each containing ten strands, are wound on four glass slabs, and placed in a jar containing a 2 per cent solution of collargolum. They remain in this for about a week, the jars being shaken once or twice in the interval. The slabs are then removed, washed in sterile water until the excess of collargolum solution is removed, and placed in 95 per cent alcohol for fifteen to thirty minutes. After this the separate strands are wound on separate spools under aseptic precautions, and preserved in 95 per cent alcohol until used.

Johnson[6] has been investigating the preparation of catgut, and has made experiments on the absorbability of variously prepared catguts by placing small pieces under his own skin. The method which gives the best results in preparing chromic gut is as follows : Immerse one gross of 10-ft. lengths for one hour in a 1–1000 solution of bichromate of potassium in water; remove the gut, wipe it, and stretch it on frames to dry. This catgut will last two or three weeks before absorption. To obtain a more durable catgut, lasting about six weeks, the solution used should contain 1 per cent of bichromate of potassium, and the time of immersion should be one hour as before. The quantity of solution is of no importance; but it must not be used a second time.

Iodine catgut is quite satisfactory when a period of only six to ten days is required before absorption, and so is formalin catgut. The commercially-prepared catguts are very resistant, lasting twelve weeks or more.

He thinks most surgeons would prefer heat as the sterilizing agent in preference to chemical sterilization. He tried various strengths of methylated alcohol for heating and sterilizing catgut, but found that the gut is always profoundly changed unless it be over-hardened; and absolute alcohol must therefore be used, which is very expensive. He has used xylol and mixtures of xylol and absolute alcohol, but as the cylinder in which the gut is generally boiled has not proved very satisfactory, he has used glass tubing. He gets glass tubing with an outside diameter of 1 cm. and the thickness not more than 1 mm.; he takes lengths of 2 ft. 6 in., washes them well out with water and then methylated spirit, and dries before a fire. The clean dry lengths of tubing are then sealed in the middle in the blow-pipe or ordinary Bunsen flame, and the edges of the open ends are rounded in the flame. Then with clean and perfectly dry hands half a hank of catgut (about 5 ft.) is rolled round two slightly separated fingers, and is inserted into the tube and pushed to the closed end of the glass tubing with a glass rod of smaller diameter. Then enough xylol to completely cover the catgut is put in from a burette or pipette, and the end sealed off in the blow-pipe or Bunsen flame. After sealing, the tubes are placed in water in an upright position, which is maintained by arranging them in the pockets of a calico-bag suspended in an instrument kettle. They are kept at 212° F. for from half an hour to an hour, varying with the thickness of gut, or they may be kept at 212° F. for about twenty minutes on each of two succeeding days. When to be used the tubes are filed about opposite the upper end of folded gut and broken in a sterilized towel; the gut is extracted with sterilized forceps and placed in lotion. The nurses at the Manchester Royal Infirmary now prepare the gut in this manner.

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SWEATING SICKNESS.

E. W. Goodall, M.D.

During the last 200 years there have been several epidemics of this disease in different parts of France; but towards the close of the nineteenth century they became limited to the region through which runs the river Charente. In May of last year (1906) the disease reappeared, after a fourteen years' absence, in the department of

Charente, at a village called Génac, about fifteen miles to the north-west of Angoulême. It quickly spread, mostly in westerly and northerly directions, till it had invaded a tract of country some thirty-five to forty miles in diameter. Most of the cases occurred before the middle of June, and by the middle of July the epidemic had died out. Altogether nearly 6300 persons were attacked (6 per cent of the population), though the attack-rate varied much in different villages. The case mortality was nearly 2 per cent.

The first symptoms of the disease were often gastric disturbance, constipation, headache, and fever of a few days' duration; but nearly always these prodromal symptoms were very slight and passed unnoticed, so that the characteristic sweat was the first symptom. The affected person would go to bed feeling quite well, and would wake up in the early hours of the morning with vague sensations of ill-health and bathed in sweat. The condition of sweat lasted two to four days, and was succeeded by an eruption. During the period of sweating there was pyrexia, with, in some cases, nausea or vomiting and epistaxis. Certain nervous symptoms formed a characteristic feature of this stage: a sensation of tightness of the chest, palpitation, respiratory embarrassment. These symptoms were often most distressing, so that the patient thought he was going to die. The eruption appeared on the third or fourth day; sometimes it was delayed to the fifth, sixth, or seventh. It was heralded by intense itching or by a feeling of pins and needles. At the same time the nervous symptoms increased in severity, and then was the dangerous period of the disease. The eruption began on the sides of the neck, the flanks, the front of the forearms, the wrists and backs of the hands, and the front of the thorax. It spread afterwards to the rest of the trunk and to the lower extremities. The face was rarely affected, though it was usually very red. Just as the rash was coming out the skin felt rough because of a number of minute papules that appeared; these papules increased in size and became red and conical; between them a morbilliform or scarlatiniform erythema appeared. Both varieties of erythema might be seen at the same time in the same person. The summit of the papules (which were the size of millet seeds) became white before they disappeared. Between the papules were often a number of very minute vesicles, like sudamina.

The eruption took twenty-four to forty-eight hours to come out fully. During this period the temperature came down, and the nervous and other symptoms subsided. The urine, scanty up to now, became abundant; sometimes there was bleeding from the nose, lungs, or bowels. About the eighth day convalescence began; it lasted several weeks, during which the patient was very weak and suffered from gastric troubles, more or less marked. The fading of the rash was followed by profuse desquamation, which often consisted of large flakes, such as one sees after scarlet fever.

Various degrees of severity were observed in this epidemic. In some cases death took place in a few hours, the patient being comatose and convulsed. Sometimes there was hyperpyrexia. In a few cases death was not only sudden but unexpected, the previous symptoms not having been severe. On the other hand, very mild and abortive cases were observed.

The treatment adopted in this epidemic consisted chiefly of **Diuretics, Nerve Sedatives,** and **Cardiac Stimulants** according to necessity. Some cases of high temperature did well under the **Cold Bath** treatment.

There is some difference of opinion as to the cause of the epidemic amongst those who have written about it. Bacteriological investigations yielded no positive results. One set of observers connected the epidemic with a disease amongst field-rats (*compagnols*), and believe that the disease was carried from the rat to the human subject by fleas. These writers are of the opinion that the disease is not infectious in the ordinary sense of the word. On the other hand there are those who do not believe in the rat hypothesis ; they affirm that the disease is infectious, and spreads from one person to another ; they confess their ignorance of the true cause. A perusal of the accounts leads the present writer to favour the views of the latter observers. One curious observation remains to be mentioned. The outbreak of sweating sickness was immediately preceded by one of measles, which began in Génac during the second week in April. The measles outbreak was started by a little girl, who developed the disease two days after coming from Cognac, where measles was prevalent. There were never any cases of sweating sickness in Cognac during this epidemic ; it was just outside the invaded region. Early in May cases were noticed in which the symptoms were those of combined measles and sweating sickness (*rougeole suettisée*). Then measles disappeared and the cases presented symptoms of sweating sickness only. In previous epidemics it has been recorded that sweating sickness has accompanied or very closely followed outbreaks of measles, scarlet fever, cholera, dysentery, typhoid fever, small-pox, and pneumonia.

References.—Haury, *Rev. de Méd.* Feb. and Mar. 1907 ; Vignol, *Sem. Méd.* Jan. 9, 1907.

SYCOSIS.

(*Vol.* 1906, *p.* 492)—Hall recommends constant close shaving, followed each morning by the application of : R Calaminæ, ʒij ; Zinci Oxidi, ʒij ; Glycerini, ʒss ; Liq. Plumbi, ʒj ; Aq Rosæ ad ℥j. **Boric Lint Fomentations** are to be worn every night. If the calamine lotion dries too much, use **Ung. Glyc. Plumbi Subacetatis.** Treat pustules by pulling hairs out of them, and applying **Hydrarg. Biniodid.** in spirit, with a pointed match. Also treat the general health. **X Rays** may cure otherwise intractable cases.

SYMPATHETIC OPHTHALMIA. (*See* Eye, Injuries to.)

SYNOVITIS (Traumatic).

(Rose and Carless, *Manual of Surgery*)—Rest the joint in the most comfortable position : for the shoulder, bandage the arm to the side, and apply a sling to the hand ; for the elbow an internal splint is advised, the arm being flexed at the elbow, and the forearm carried across the body midway between supination and pronation ; for the wrist, a palmar splint to the forearm ; for the hip, a Liston splint and extension ; for the knee, a back splint ; and for the ankle a Roughton splint. Apply evaporating lotion in the early stages (Methylated Spirit, 1 part ; Liquor Ammoniæ Acetatis, 1 part ; Water, 6 parts). Practise aspiration, if there be great and persistent distention with fluid. In the later stages, break down adhesions under an anæsthetic, maintaining the freedom thus gained by passive movements.

SYPHILIS.

J. W. Thomson Walker, M.B., F.R.C.S.

In a contribution to the study of syphilitic bacteria, Mühlmann[1] records his observations upon twenty-eight patients, of whom twenty-four were diagnosed as syphilitic, and four were doubtful. The material examined comprised roseola, papules, condylomata, the products of the inguinal lymph glands, removed by means of a syringe, and the blood of a number of cases. In twenty-four undoubted cases of syphilis the *Spirochæta pallida* was found in only five, usually in condylomata, and in no single case was it discovered in the blood. Mühlmann found, on the other hand, in syphilitic papules, condylomata, ulcers, and bubos, shining bodies of round, oval, pear, or cone shape, and small size (about $2\cdot3\ \mu$ diameter), which showed extraordinary mobility. The bodies were polymorphous and contractile. They possessed a tail as long as the body. The bodies stained with difficulty, and were best shown by staining with carbol fuchsin after being treated with sulphuric acid. They were met with free, and in epithelial, round, or lymph cells. In two preparations they were observed in large amœboid cells. The writer believes that these are neither identical with the micro-organisms described by Klebs and Döhle, nor with the *Cytorrhyctes luis* of Siegel, and that everything points to their being a form of zoosperm.

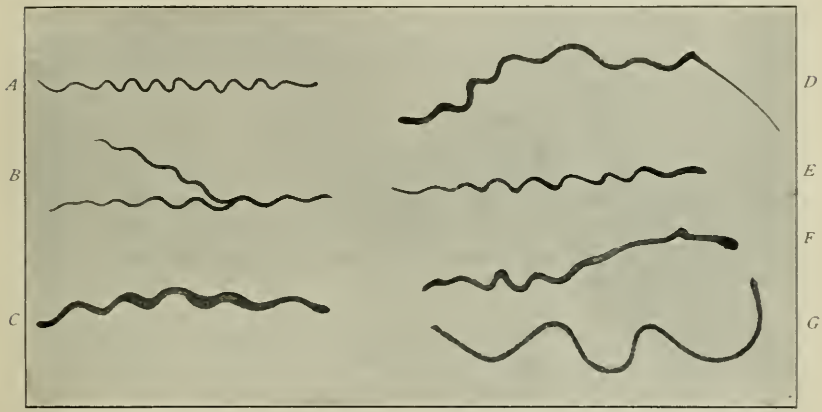

Fig. 92.—*A*, typical *Spirochæta pallida* (gentian violet); *B*, evidence of longitudinal division (gentian violet) ; *C*, shorter form, with regular coils and more equal ends, seen in secondaries (silver preparation) ; *D* and *F*, irregular large type, seen in secondaries (silver preparation) ; *E*, typical *S. pallida*, showing how the relations between the ends are maintained in silver preparation ; *G*, *S. refringens* (silver preparation).

Herbert Fox[2] publishes some observations upon the structure of the *Spirochæta pallida* (Schaudinn), in which the following points are worthy of note. The spindle-like bundles and rosette arrangements of these spirochætæ, simulating segmenting trypanosomata, which Herxheimer and Laeser have described, were not observed. In smears the organisms were usually single. Two or three might be seen intertwined at some point, while two individuals were sometimes found lying parallel, with their coils closely interlocking, and giving the appearance of longitudinal division. In tissue preparations they were most frequently single, and when present in large numbers lay more or less parallel to the tissue structure. Masses of spirochætæ were without definite arrangement. In tissue preparations the long axis of the organism was commonly straight, but in smear preparations it was most frequently curved, at times even forming a circle. These shapes were probably artificial, and due to variations in drying. No contractile pore or undulating membrane was observed with any method of examination. Undoubted transverse division was frequently observed, and was characterized by an area of pale staining at or near the middle of the spiral, with subsequent thinning and separation of the extremities into new individuals. Transverse division into three individuals was once observed. The newly-formed individual spirals had more curves in relation to their length than the older individuals. Indications of longitudinal division were not clear. The forms of the *Spirochæta pallida* in the initial sore were more typical and regular in their shape and size than those met in the later manifestations. In all preparations with high magnification, one end of the organism was thicker than the other. The thinner end fades away into a fine filament, called by Schaudinn the flagellum, but this appears to be a continuation of the body. This extremity is blunt, and has not the appearance of a whip. The thicker end is not only wider, but takes the stain more deeply. A short, thick form of *Spirochæta pallida* was observed in the secondary lesion. This form was quite regular, and both ends had nearly the same diameter. The average length of this small form was 10·1 μ, with an average of eight windings. These were observed about once in every spiral, and were differentiated from the *Sphirochæta refringens* by the fineness and apparent flexibility of the latter, and by the coils forming a small arc of a large circle, with ends of the same thickness and equal staining. The average length of these was 12 μ, and the average number of curves six.

Metchnikoff and Roux[3] record a series of fresh observations upon the attenuated virus of syphilis. They endeavoured to discover whether the passage of the organism through certain lower apes did not attenuate its virulence. For this purpose they chose the rhesus variety of macaques, which are less susceptible to the syphilitic virus than the long-tailed varieties. The virus was shown after eight "passages" to be as virulent as ever in producing primary and secondary lesions in a chimpanzee, but on re-inoculation through a series of rhesus it showed the peculiarity that the incubation of the primary lesion became shorter and shorter, until it was seven days instead of nineteen. This virus, inoculated into the monkeys for a further period, appeared to have lost much of its virulence, producing slight lesions of short duration ; and in three cases of inoculation the most susceptible monkey, the chimpanzee, was immune. These authors, therefore, raised the question as to whether this form was not innocuous to man, and suggested the possibility of vaccination with an attenuated virus. Other facts point also to attenuation of the virus, for these observers record the case of a laboratory assistant who, while aiding these researches, observed a small ulceration on his lower lip, which disappeared in a few days and then reappeared some weeks later. This ulcer did not resemble any syphilitic lesion. Nevertheless, a macaque, which was inoculated with a scraping of the sore, after thirty-five days developed a typical syphilitic lesion containing numerous pale treponemes (Schaudinn has suggested the name "Treponema" for the spirochæta.—Ed.). The assistant did not develop any other recognizable sign of syphilis. It is probable that there was here an inoculation of a human subject with virus attenuated by apes, but it is difficult to say whether the patient had not previously been vaccinated against the human virus. On the other hand, a virus attenuated by several passages through apes may sometimes show itself very attenuated or even quite innocuous to man. Some of the virus, having been submitted to five passages through apes, was injected into a man of 69 years who was immune to syphilis. He developed only two small red papules, which appeared twelve days after inoculation, and disappeared several weeks later. No other lesion was developed during twelve months' observation. A chimpanzee and a macaque inoculated at the same time showed typical primary lesions.

"These experiments furnish the data on which a method of vaccination against syphilis by the passage through lower apes may be based. It is necessary to fix the number of passages necessary in order to obtain the best vaccine." "One may perhaps hope for a vaccination of human beings against syphilis which will not produce secondary lesions."

Marzinowsky,[4] in investigating the relation of the *Spirochæta pallida* to syphilis, made a number of control observations with the object of discovering whether this virus was found only in syphilis. He found that spirochætæ were widely distributed in nature, and accompanied almost all changes in the skin which are related to tissue necrosis. They were found in ulcerative gingivitis, in noma, in a case of frost-bite, etc. In all the different forms of spirochæta only two so resembled the *S. pallida* that they might be confused with it. One of these was discovered in the sputum and the other in the urine. That in the sputum was somewhat thicker than the *S. pallida*, while that in the urine of a child suffering from scarlatinal nephritis could not be distinguished from it, and this observer therefore named it the *Spirochæta pseudoluetica*.

Domernikowa[5] records his investigation of a case of pneumonia alba syphilitica in a child aged 1¼. The greatest number of spirochætæ were found in the walls of the bronchi and alveoli. These were irregularly distributed, being plentiful at some parts and absent at others. The same distribution was observed in the contents of the bronchi and vessels. Spirochætæ were absent from parts of the lungs that were healthy.

In the Institute for Experimental Medicine in St. Petersburg, Wersilowa[6] investigated the transference of the spirochæta from mother to child in a case of triplets, of which one boy was macerated, a second boy lived several hours and showed pemphigus, papules, and a large, hard spleen, and the third, a female child, lived one day and showed no syphilitic lesions. The mother showed no signs of syphilis. The placenta was in three parts, and showed connective tissue nodules. Spirochætæ were found in smear preparations from the umbilical cord, pemphigus, and in the heart of the macerated child; and also in smear preparations from the lungs, heart, pemphigus, and papules, and in sections of the placenta, cord, liver, heart, lung, spleen, skin, pemphigus, and papules of the second child. Wersilowa therefore concluded that: (1) The *Spirochæta pallida* is found in syphilitic processes and in the organs of hereditary syphilitic fœtuses; (2) The spirochæte may pass from the mother to the child by way of the cord. (3) The spirochæte may be found in the placenta, cord, and organs of the fœtus where the mother shows no sign of syphilis.

At the Congress of the German Dermatological Society[7] in Bern, in September, 1906, the etiology of syphilis was discussed. According to Neisser the amount of the poison injected was the most important factor in the inoculation. Syphilis did not gain a footing where there was unbroken skin or mucous membrane; even energetic rubbing in of the poison was unsuccessful. Subcutaneous or intravenous injection were also unsuccessful. In practice experimental proof of syphilis was difficult or scarcely possible to obtain, on account of the long interval which must intervene. The discovery of the spirochæte was much more important according to this practitioner. In fifty-two experiments of injection of blood in apes a positive result was obtained from the fifth to the thirty-fourth days, much earlier than the appearance of the primary chancres. The inoculation was unsuccessful in thirty-seven cases. He concluded that syphilis could be inoculated from the blood, but not from the milk or semen. Hoffmann had obtained a positive result with spinal fluid. The probability of successful inoculation was greater in animals inoculated with human syphilis than where it had been passed through other animals. The spread of the syphilitic poison in the body was very rapid and soon after the injection. In one case excision of the primary point of injection on the eighth day was successful in preventing general symptoms, but this was exceptional. After the eighth day excision could never prevent the appearance of secondary symptoms. He was successful in preventing the appearance of general symptoms by rubbing in locally 5 per cent nitrate of silver solution, iodoform, carbolic acid, and corrosive sublimate (2- to 3-1000), but not by the application of 10 per cent precipitate ointment and grey ointment. Hoffmann found the spirochæte most abundant in the expressed discharge of the primary lesion and of condylomata. The form of movement of the *S. pallida* was characteristic. All other spirochætæ had an eel-like movement, while the *S. pallida* had fine lateral bending movements. The addition of normal saline solution rendered the observation of this more easy. The serum of untreated syphilitics reduced in some cases the movements of the spirochætæ. In glycerin the *S. pallida*, according to Schaudinn, lost its movement and became absolutely stiff. The spirochæte passes quickly into the blood, although the conditions for its existence in it do not appear to be very good. They are often found in masses in the vessel walls, although they may not have been discovered in the blood.

James Brew,[8] of Nashville, records a case of reinfection with syphilis :

A man, aged thirty-seven, of somewhat loose habits, was treated twenty years previously for a hard chancre, followed four or five weeks later by an eruption, which was diagnosed by a specialist in venereal diseases as syphilis. He underwent syphilitic treatment for three years, and had no recurrence, except an attack of "syphilitic rheumatism," which cleared up under mercury and iodides. He had various venereal accidents, and in August, 1905, a hard, densely indurated mass, the size of half a peanut, appeared on his penis three weeks after connection. The inguinal, cervical, and epitrochlear glands were palpable, discrete, and slightly tender. This was followed by an eruption over the body, with headache and sore throat.

In discussing the case, the author states that all authorities recognize three immunities against syphilis : (1) In a person who has suffered from the acquired form of the disease ; (2) In a person who has inherited the disease from one or both parents (Profeta's law) ; (3) In a woman who has borne a syphilitic child without showing in her own person any of the lesions of acquired syphilis (Colles's law). There are several sources of fallacy in diagnosing a second attack of syphilis : (1) A non-specific general eruption may accompany a chancroid ; (2) Impetigo contagiosa, ecthyma, or some form of eczema may be mistaken for true syphilis, and, if it follows a genuine attack, be cited as a case of second infection, or the first attack may have been impetigo or eczema, and the second true syphilis ; (3) A chancroid or mucous patch may become the seat of such marked inflammatory induration that it is mistaken for the true chancre ; (4) A tertiary gummatous ulcer may be mistaken for a hard chancre ; (5) There may possibly be such a thing as a recurrent chancre ; (6) Not infrequently chancre almost entirely disappears, yet a slight induration remains, which at some subsequent period enlarges into a similitude of a new initial sore.

R. W. Taylor,[9] of New York, says the belief that in the primary stage of syphilis the disease is in a latent condition, and only becomes constitutional when the general manifestations appear, is now known to be fallacious. It is now accepted that the syphilitic poison infects the part at once, and from the original focus rapidly diffuses itself through the entire system. The existence of an early systemic infection is shown by the development in some cases of a succession of initial lesions following the appearance of the inaugural chancre—at various intervals before the date of the general explosion; in other words, in the classical primary period. These anomalous initial lesions have been termed *chancres syphilitiques successifs* by French authors. They are evidence of intraprimary syphilitic infection. Other evidence of the early diffusion of the syphilitic poison is presented by the appearance of lesions which Taylor calls prodromal localized syphilides. In clinical practice successive chancres are usually due to simultaneous or later infections from a single source, or to auto-infection. In some cases the victim may be poisoned from two sources. The inoculated lesions are found to be papular, nodular, and erosive, and usually rather small but in some cases they may be as large as the parent chancre. The date of evolution of the successive chancres varies from five to thirty and in one case forty-two days after the first one. It is very rare to observe the development of a successive chancre later than ten days before the appearance of secondary manifestations. A special form of consecutive chancre is due to coaptation of parts, one of which is the seat of a chancre. This is seen on the scrotum, internal surface of the thighs, or upon the hypogastrium in cases of chancre of the penis; and in women on one side of the vulva, the opposite one being the real lesion.

Taylor draws the following conclusions: (1) By the auto-inoculation of the secretion of the hard chancre in the primary period a proliferative lesion resembling a secondary papule rather than a true chancre is produced; (2) In many cases a syphilitic is infected several times following a first infection, and a succession of primary lesions is produced; (3) In some cases infection of one or more portions of the body, usually extragenital, is produced by a second syphilitic individual a short time after the development of the initial lesion; (4) Infection of a patient by a second syphilitic a short time after his or her primary infection occurs in exceptional instances; (5) Successive syphilitic lesions run a regular course, and do not usually portend malignancy; (6) The view that syphilitic infection is for a time local, and that there is an immunity to further early specific neoplasms in contiguous parts, is based on a false conception of the course of syphilitic infection; (7) The claimed immunization in primary syphilis is founded on false pathology; (8) Though syphilis usually pursues a tolerably orderly course, and its general manifestations appear at the classical secondary climax, sparse precocious exanthemata are not infrequently observed.

F. C. Knowles,[10] of Philadelphia, in recording a case of multiple chancre where there were five initial lesions on the penis, states that such cases are rare in his experience. He has seen three cases of multiple chancre in two hundred cases of syphilis. He refers to the following varying statistics of multiple chancres observed by other writers: Beaurin and Dumont twenty-five in ninety-one consecutive cases, Queyrat 26·2 per cent, Büchler 12 per cent, Lewin 10 per cent.

J. D. Rolleston[11] relates two interesting cases of syphilis simulating typhoid in order to "emphasize the importance of bearing in mind the possibility of syphilis in dealing with obscure cases of fever." Such cases are not common. "Since 1896, out of a total of 3,076 cases admitted to the Metropolitan Asylums Board hospitals, wrongly certified to be suffering from typhoid fever, only ten were subsequently diagnosed to have syphilis only." Some of the cases resemble typhoid very closely. The spleen may be enlarged, the abdomen distended, and the stools loose. It is often important to realize that fever in syphilis may exist apart from any other specific manifestation, such as iritis, adenopathy, periostitis, arthritis, or skin lesions of any kind. To this variety Fournier has given the name "essential syphilitic fever," to distinguish it from the symptomatic fever which is associated with obvious syphilitic lesions. In the former case the disease may be mistaken for tubercle, for malaria, or for influenza. In one of Rolleston's cases typhoid fever, diphtheria, and brain disease had been successively diagnosed.

Parkes Weber[12] relates several cases of tertiary syphilitic fever combined with changes in the spleen, liver, bones, etc. One case illustrated on four different occasions the rapid disappearance of the fever on the commencement of anti-syphilitic treatment.

Tomomitsu Watabiki,[13] of Tokio, made a study of the blood in syphilis, and found that in the primary stage there was only occasionally a decrease in the erythrocytes. In the second period the rule was to find a decrease in the red cells, especially in severe cases, in which they might be as low as 2,000,000. In about 70 per cent of the cases there was a distinct change in size and form. In the tertiary stage more or less decrease was demonstrable, and some change in shape and form. A loss of hæmoglobin was observed in all three stages of syphilis. In the primary stage the total leucocyte count was unchanged. The lymphocytes were normal or slightly decreased, the polynuclear neutrophiles were increased. In the second period the total count was usually smaller than normal. Lymphocytes were normal or slightly increased, polynuclear neutrophiles might be slightly decreased. Mast cells were more numerous than in the primary stage, and myelocytes were occasionally seen. In the tertiary stage the total count was usually decreased. Eosinophiles were present in greater numbers, mast cells were present as in the secondary stage, and myelocytes were in relatively greater numbers than in other stages.

In an article on deformities of the penis due to syphilis, gonorrhœa, and other causes, R. W. Taylor,[14] of New York, describes the indurating œdema of the penis which is seen in the primary and secondary stages of syphilis. Indurating œdema, he states, is observed in no other disease than syphilis, and is usually seen as a complication of hard chancre. "When the initial lesion is fully formed and its induration well marked and circumscribed, a wall or circumvallation may develop around it. This hyperplastic process occurs slowly or moderately quickly, without any marked symptoms of pain, uneasiness, or discomfort. In two or three weeks the tumefaction around the chancre becomes well marked, and examination shows swelling and hardness, without pain in the parts. In this aphlegmasic manner the induration extends, and may involve the whole integument of the penis." In most cases the hard œdema is limited to the penis, but it may extend up the abdominal walls and towards the groin, or it may creep down and involve the scrotum. The invaded tissues are smooth, hard, and dense; there is no pitting on pressure, and no pain or tenderness. The colour is of a dull brick-red or purplish hue. It may remain for months. Indurating œdema may also complicate mucous patches and condylomata, and develop from traumatism and around such lesions as chronic chancroids and herpetic ulcers, but as a rule the severe extensive cases complicate hard chancres. In many cases this lesion, even if extensive, disappears, and seems to have no untoward result, but in some instances greater or less disfigurement or deformity of the parts is produced.

Tertiary ulcers and gummatous infiltrations of the skin of the penis may also disfigure that organ. In such cases the infection lasts for several years. Later on, atrophy and shrinking may take place. In some cases of old syphilitics with long prepuce, years after subacute balanitis or chronic gonorrhœa, the distal extremity of the penis slowly becomes swollen. The organ becomes permanently enlarged, and presents an appearance like an Indian club.

There is a group of cases in which there is a more or less vague history of syphilis and of undoubted gonorrhœa. These are not uncommon in tropical countries. They are mixed cases in which syphilis, gonorrhœa, and chronic, slow, streptococcal infection are the indiscriminate causal agents. In tropical climates filariæ may act as concomitant and causal agencies. When indigenous to American soil, they are classed as cases of elephantiasis nostras. In regard to the etiology of genital elephantiasis, Taylor states the following conclusions: (1) The filariæ are rarely, if ever, the sole pathogenic cause of elephantiasis of the male genitals in extratropical countries; (2) In tropical climates there is evidence that a mixed condition is the underlying cause, the predisposing factors being uncleanliness and want of hygiene, and the exciting causes old, uncured syphilis and gonorrhœa; (3) It is probable that gonorrhœal infection in the urethra may have been an early factor in the inflammation, but that the gravamen of the attack was by the streptococcus (possibly *erysipelatis*), which in all countries seems to be the pathogenic cause; (4) Congenital anomalies of the lymphatics may perhaps be concerned in the processes inviting ectasis; (5) In America, and undoubtedly in Europe, elephantiasis of the male genitals is never of filarial origin unless the disease started in tropical regions, and then it is a moot question whether it was the sole cause of disease.

TREATMENT.—Boisseau[15] discusses the local treatment of syphilitic gummata by **Injections of Iodide of Potassium.** The drug, he contends, is most potent when injected into or near the gummata, instead of being taken as a medicine by the mouth. These injections may be used simultaneously with mercurial preparations in cases in which the iodide cannot be taken by the mouth. They may be substituted for general mercurial or general iodide treatment, when the patient cannot endure either this one or the other, owing to bad teeth or renal insufficiency. They ought also to be tried in cases of syphilides or gummata which resist general treatment. The local method of using iodide of potassium can, of course, only be adopted in cases of cutaneous gummata. A weak solution (3 per cent) is sufficient, and causes very little pain. The injection may be made painlessly by adding guaiacyl calcium to the iodide of potassium solution. An ordinary hypodermic syringe holding 2 cc. (33 min.) may be used. Besnier and Radcliffe-Crocker push the iodide injection into the gumma ; Boisseau and others advise that the solution be placed in the cellular tissues around the gumma.

Colonel Lambkin, R.A.M.C.,[16] describes an improved preparation for **Intramuscular Injections** of insoluble salts of **Mercury** in the treatment of syphilis. Two factors have militated against the treatment of syphilis by this means, namely, the pain caused by the injection, and the nature of the vehicle, which is liable to act as a foreign body. Calomel is the most potent salt of mercury in its effect upon syphilis, but it has the drawback of causing intense pain at the site of injection. Fournier gives statistics collected by himself and Portalier of 473 cases of syphilis treated by injections of calomel ; in 36 per cent pain was slight, in 35 per cent moderate, in 29 per cent acute, and in 3 per cent intolerable. Lambkin says this rather understates the actual amount of pain. Although the action of calomel on syphilis is so markedly energetic and rapid, it is short-lived when compared with that of metallic mercury, and it is necessary to revert to the latter as soon as possible. "Being cognisant of the analgesic powers of creosote, it struck me that some combination between it and camphor might possibly meet with success." Colonel Lambkin therefore had a purified creosote prepared. This is "an intimate chemical substance consisting roughly of 20 per cent of guaiacol, 40 per cent of creosote, and 40 per cent of monatomic phenyl ; it is **Methyl-catechol**, and has the empirical formula of $C_6N_4C_{10}H_{16}$; it possesses double the bactericidal effects ot pure carbolic acid when tested by the Rideal-Walker process." This substance, in combination with camphoric acid, has proved successful in combating pain which may immediately follow an injection, and in preventing the occurrence of after-pain on the second or third day.

The substances that have been employed to hold the mercury in suspension are glycerin, gum-water, olive oil, vaselin, oil of vaselin, and lanolin. Each was introduced as an improvement on the other. "Personally," writes Lambkin, "I could never get away from one objection which was common to all—being insoluble in the organism they entered the circulation as foreign bodies, and as such might possibly have produced nodosities, abscesses, and embolism." At the suggestion of M. Duret, a well-known French chemist, the author has been trying **Palmitin** as a vehicle during the past eighteen months, and has been satisfied with it. Palmitin is a neutral fat derived from palm oil, having the same chemical composition as the palmitin of the human system. It is easily saponified in the fluids of the organism, being converted into a soluble alkaline palmitate and glycerin; thus it does not enter the circulation as a foreign body like all substances hitherto used as vehicles. The following are formulæ for mercurial creams:—

℞	Hydrargyrum	10 grams
	Eq. parts Absolute Creosote and Camphoric Acid } Creo.-camph. ..	20 cc.
	Palmitin Basis	ad 100 cc.

10 min. contains 1 gr. of mercury.

℞	Calomel	5 grams	Palmitin Basis	100 cc.
	Creo.-Camph.	20 cc.		

10 min. contain 1 gr. of calomel. Melting point 37° C.

"Both these preparations form cream of almost perfect consistence and homogeneity. Both the metallic mercury and calomel are triturated with the other constituents by a special process which has been highly developed by Messrs. Oppenheimer. Both are very finely divided. Messrs. Oppenheimer, to prevent any chance of overdosing, supply these creams in aseptules, each graduated to hold a maximum dose of 15 min."

The following course of treatment of a case of syphilis without relapses is elsewhere[17] recommended by this observer: Six weeks' treatment (six mercurial injections); two months' interval; two months' treatment (four injections); four months' interval; two months' treatment (four injections); six months' interval; four months' treatment (four injections); total 21½ months' treatment.

Professor Gaucher,[18] of Paris, prefers a soluble salt to the insoluble preparations for hypodermic treatment. He generally uses the benzoate in a 1 per cent solution in distilled water containing also 2½ per cent of sodium chloride. He advises that the pharmacist be requested to prepare **Mercury Benzoate** freshly by adding sodium benzoate to the yellow oxide of mercury in an acid solution. The salt thus obtained should be washed for a long time in cold distilled water, or until the washings no longer redden litmus paper. The sodium benzoate of commerce is usually impure and does not dissolve readily. The solution when made from the commercial product does not keep well, for the salt commences to precipitate in a few days. The dose usually given is 2 cgrams, or 2 cc. of the solution, daily. If at the same time the patient be under treatment with agents which facilitate the elimination of mercury, such as sulphur baths or the drinking of sulphur waters, larger doses may be well supported. The injections are made with a short fine needle, directly into the subcutaneous cellular tissue and not into the muscles. The care of the mouth is important. Frequent rinsing with solution of potassium chlorate

(2 per cent), or with a solution of hydrogen dioxide in three parts of water, is advisable. The following dentifrice may be used :—

℞ Pulv. Potassii Chloratis | Pulv. Cinchonæ āā 15 grams
Cretæ Præparatæ | Phenylis Salicylatis 2 grams
M. Ft. pulv.

Professor Gaucher recommends the following course of treatment. For the first year two months of treatment by pills by the mouth or fifteen days of injections and one month of pills, or two series of twenty days each of inunctions. For the rest of the year treatment is given each alternate month. For the second year, treatment for five months, each month of treatment alternating with a month of rest, except in the summer, when two months' rest may be given. For the third year four months of treatment in all, giving two months of rest between each month of treatment. For the fourth year, two months only of treatment, one in spring and one in the fall. In ordinary cases, after a four years' course of treatment the patient may pass a fifth year under observation without treatment. If after the expiration of the fifth year he has not presented any symptoms for two years, the patient may be allowed to marry in the sixth year, but it is well to give him a course of one or two months' treatment before marriage in order to obviate the danger of procreating a syphilitic child. When the wife of such a patient becomes pregnant, she should receive a mercurial treatment in the early months of gestation.

Lindenheim,[19] in an article on a fever reaction at the end of the first mercurial administration in the early days of syphilis, quotes from a paper by Thalmann : " The recognized outburst of roseola after the first administration of mercury is to be referred to the widespread destruction of spirochætæ by the mercury and to the resulting flooding of the organism with the endotoxins which are set free by the death of the germs." Lindenheim infers that a rise of temperature should accompany this phenomenon. There are three fallacies to be considered : (1) The increase of the syphilitic eruptive fever after the first mercurial treatment. Both Fournier and Lesser state that this form of fever is always of several days' duration, sometimes lasting for two weeks. (2) The confusion with the fever of mercurial intoxication. But according to modern toxicologists, mercury is never the direct cause of fever, and only indirectly causes it by producing stomatitis, enteritis, etc., so that by excluding all such causes it is possible to avoid this fallacy. (3) It is necessary to avoid being led astray by an accidental rise of temperature from bronchitis, etc. In 106 cases examined there was a reaction in twelve. The reaction occurred always within the first twenty-four hours after the administration of the mercury. In women it reached its maximum in the first twenty-four hours, and usually fell by crisis within that time. In male subjects, however, the rise of temperature which similarly occurred in the first twenty-four hours continued for several days, and fell gradually to normal.

W. I. Robinson,[20] of New York, advocates the use of **Pilocarpine** as an adjuvant in the treatment of syphilis. The drug is particularly useful in cases "which seem to be supersaturated with mercury and which no longer respond to the drug." It has also a remarkable effect upon salivation and stomatitis, and this observer says it is much more efficient in this respect than atropine or potassium chlorate. The writer is also convinced that cutaneous syphilides which obstinately resist the persistent administration of mercury will disappear rapidly if pilocarpine be administered for several days, either in addition to the mercury or, if sufficient mercury be already given, after discontinuing the drug. The pilocarpine should always be prescribed alone. The alkaloidal salt is recommended either in pills containing 2 to 8 mgrams each ($\frac{1}{32}$ to $\frac{1}{8}$ gr.) two or three a day, or the following solution :—

R Pilocarp. Hydrochlor. .. .. .. 0·12 gram (gr. ij)
Aq. Chlorof. .. .. 120 grams (℥ iv)
Detur in vitro nigro. ʒj to ʒij ter in die.

Dardel, of Aix-les-Bains,[21] discusses the use of **Sulphur Waters** in syphilis. The employment of mineral waters in addition to the mercurial treatment is directed against the anæmia or cachexia due to the syphilitic poison, or it may be used for certain organic defects which existed before the onset of syphilis and which complicate the latter (scrofula, arthritism, neuropathy). Lastly, thermal cures increase the tolerance of the organism to mercury. Three categories of mineral water stations are suited for the treatment of syphilis : the saline, the arsenical, and above all the sulphurous. **Saline Waters** have a powerful action on nutrition, and increase the phenomena of oxidation. Their most important indication is when syphilis is complicated by the existence of scrofula or of syphilitic cachexia, and it is necessary to stimulate the whole organism. **Arsenical Waters** are to be recommended when syphilis affects a torpid nature. **Sulphur Waters** have the most marked therapeutic action of any variety. Formerly sulphur waters were only given when the secondary period was past, as it was feared that they might lead to mucous or cutaneous complications. They were also given to patients who seemed quite cured, in order to prove whether they were so or not, for in the latter case symptoms reappeared after a sulphur treatment. This method is now entirely abandoned.

Experience has shown that sulphur waters have a general tonic and stimulant action. The appetite is stimulated, the red corpuscles are increased in number, the urine is increased in quantity and contains more urea. Nutrition, which is retarded by the direct action, is stimulated by the use of sulphur waters. The sulphur cure has also a special action on the absorption and elimination of mercurial compounds. Sulphur waters render compounds of mercury more soluble and increase their absorption and action. The sulphur acts on mercurial compounds stored up in the organism, and facilitates their elimination. Long after a mercurial treatment one can find traces of mercury in the organism, especially in the liver, the kidneys, and the lymphatic glands. After the ingestion of sulphur water, mercury has been found in the urine several weeks after the patient had ceased taking the mercury, the urine having contained no mercury before the sulphur cure was instituted. Sulphur waters allow a very prompt and energetic treatment of syphilis, for they facilitate the absorption of large doses of mercury without fear of intoxication. The waters are therefore to be administered to patients who stand mercury badly, or who present symptoms of intoxication, or whose system is saturated with mercury to a dangerous extent. Unless the patient has lately undergone a severe mercurial course, the water cure should be combined with mercurial treatment. The author recommends the hypodermic use of soluble salts of mercury. The best-known sulphur spas in France are Luchon, Barèges, Cauteret, Uriage, Challes, and Aix-les-Bains. The water at Aix is a sulphide calcic water with a temperature of 45° C. It is used externally as a douche or vapour bath, and the Marlioz water is reserved for internal use. The "douche d'Aix" consists in a kneading (pétrissage) of the muscles, and at the same time the body is sprinkled over with warm sulphur water. The douche massage is either given in closed or in ventilated rooms. The temperature of the water varies from 57° to 109° F.

The sulphur cure is indicated at any stage of the disease. It is contra-indicated in patients suffering from arteriosclerosis or liver trouble and in highly nervous people.

In an instructive article[22] on *Virulent Syphilis* and its treatment. Colonel Lambkin remarks that in the majority of these cases there is some well-marked cause which influences the progress of the disease. The following conditions, either singly or together, will generally be found to be associated in such cases: (1) Poor physique; (2) Living under bad hygienic and generally debilitating circumstances; (3) Malaria; (4) The presence of any organic disease, especially renal; (5) Alcoholism; and (6) Delayed and inefficient treatment. "Up to a comparatively recent time such cases were looked upon as more or less hopeless . . . . and some of the greatest authorities on syphilis taught that the exhibition of mercury in them was not only contra-indicated, but actually harmful." The introduction of intramuscular **Injection of Mercury** has, however, changed this. It is necessary first of all to find out what caused the disease to assume its virulent character, and to attend to this. If the virulence suddenly sets in while the patient is under mercury, it will be necessary to stop it for a time and trust to mild sweating in hot air. Other cases may require the mercury to be increased, and if no mercury has been given the drug should be rapidly pushed. The majority of these cases will do well on small doses. Lambkin gives a weekly intramuscular injection of $\frac{1}{2}$ gr. metallic mercury as a maximum, never exceeding this, but sometimes being satisfied with $\frac{1}{4}$ gr. or $\frac{1}{8}$ gr. For the cases that require to be dealt with rapidly, such as phagedenic syphilitic chancre, intramuscular injections of **Calomel** are best; 1 gr. twice a week should be given until its physiological effects are apparent, and then mercurial cream substituted for it. The injections are given once a week for a month, and then all specific treatment is omitted for the following month. During the period of active treatment, should symptoms show signs of exacerbation, as they often do, the mercury must be stopped for a time, when the symptoms will probably improve and one can recommence specific treatment again.

Next to specific treatment comes the important point of increasing and maintaining tissue metabolism. **Sulphur Waters** and **Hot-Air Baths** are the best methods of doing this. At the outset **Iodide of Potassium** does more harm than good, but as the case progresses its efficacy is far more marked than in a similar stage of an ordinary case of syphilis. It should be given in intermittent courses of increasing doses for not more than ten days at a time. **Iodipin** is a combination of iodine and sesame oil, and is prepared in two strengths: a 10 per cent, which has been given internally in gelatin capsules, and a 25 per cent, which is given hypodermically in doses of from 15 to 20 cc. for ten consecutive days. For local lesions, **Chromic Acid** and its solutions are best. "A good procedure is to paint the lesion first with a 5 to 10 per cent solution of chromic acid, and immediately afterwards apply either the solid stick or a 30 per cent solution of nitrate of silver; this forms chromate of silver." To some of the severe mucous ulcers, **Acid Nitrate of Mercury** is the best application. For phagedenic ulcers Lambkin recommends the application of crude chromic acid. The patient should be put under an anæsthetic, crude chromic acid applied, and the slough removed by poulticing with charcoal. This may require to be repeated. After separation of the slough, iodoform should be dusted on.

REFERENCES.—[1]*Roussky Vratch*, 1906, No. 7, in *Münch. med. Woch.* Sept. 11, 1906; [2]*Univ. Pennsyl. Med. Bull.* Dec. 1906; [3]*Ann. de l'Inst. Pasteur*, Oct. 1906; [4]*Medizinskoja Obosrenije*, 1906, No. 9, ref. *Deut. med. Woch.* 1906, No. 49; [5]*Roussky Vratch*, 1906, No. 22, *Deut. med. Woch.* 1906, No. 49; [6]*Ibid.*; [7]*Münch. med. Woch.* Dec. 4, 1906; [8]*Med. Rec.* July 27, 1907; [9]*Brit. Med. Jour.* Oct. 6, 1906; [10]*N. Y. Med. Jour.* Dec. 8, 1906; [11]*Med. Press*, Mar. 20, 1907; [12]*Lancet*, Mar. 16, 1907; [13]*Amer. Med.* April, 1907; [14]*N.Y. Med. Jour.* June 8, 1907; [15]*Thèse de Paris*, 1906, in *Canad. Jour. Med. and Surg.* May, 1907; [16]*Lancet*, July 6, 1907; [17]*Hosp.* June 29, 1907; [18]*La Clinique*, Nov. 2, 1906, in *N.Y. Med. Jour.* Dec. 1, 1906; [19]*Berl. klin. Woch.* Mar. 18, 1907; [20]*Med. Rec.* June 15, 1907; [21]*Ibid.* July 20, 1907; [22]*Lancet*, Nov. 8, 1906.

SYPHILIS (Cutaneous Manifestations of).

E. Graham Little, M.D., F.R.C.P.

To disperse a cutaneous syphilitic symptom no method of treatment can compare in rapidity and certainty with that of **Intramuscular Injections,** and Shields[1] contributes a timely paper routing some of the "bogeys" that appear to have frightened practitioners from using this excellent method, which is fast replacing all others in Continental practice. He claims the following advantages for the method, viz.:

that (1) We deal with a definite quantity of mercury ; (2) The dose is regulated ; (3) We produce a more rapid mercurialization ; (4) It is suitable for both sexes ; (5) Smaller quantities of mercury are required to produce the same results as with larger quantities administered by other methods ; (6) It is not necessary for the patient to take mercury for so long a period as when given by other methods ; (7) Ptyalism occurs less frequently, in fact is exceedingly rare ; (8) Gastric intestinal disturbances are prevented ; (9) Instead of patients losing, they gain weight ; (10) The anæmia which accompanies syphilis disappears in a much shorter time than when mercury is administered by the mouth or inunctions ; (11) Owing to the limited time of its administration, there is not the anæmia which so often results from the prolonged and continued use of mercury ; (12) The symptoms yield more rapidly ; (13) It is cleanly, and suitable for mild as well as for severe cases ; (14) We have better control of our cases ; (15) As a rule, this method gives results, when others fail.

The safety and painlessness of the method depend largely on the care with which the instruments used are sterilized ; the injection into the muscle and not the subcutaneous fat ; the purity and non-irritating quality of the preparation used. This author prefers the soluble salts, and places in order of preference the sublimate, then the sozoiodolate, cyanide, and salicylate of mercury.

I have personally used the method of injection of soluble salts for the past seven years, and can confirm the commendation contained in this paper. With regard to the statement that it is equally applicable to both sexes, this may need to be qualified for English women. But the experience at the Broca Hospital in Paris, where the patients are all women, and where this treatment is the rule, shows there is no inherent objection to its use in females.

REFERENCE.—[1] *Jour. Cutan. Med.* May, 1907, p. 207.

TABES DORSALIS.

Purves Stewart, M.D.

The literature of tabes dorsalis, although of colossal dimensions, is concerned chiefly with the etiology and morbid anatomy of the disease. The profound influence of syphilis as a pre-existing cause is now almost unanimously admitted, and in this connection it is of interest to note that Spielmeyer[1] has succeeded in producing experimentally in dogs degeneration in the posterior roots and posterior columns almost identical with those of tabes, by inoculating the animals with the trypanosome of sleeping sickness. Such "trypanosome-tabes" takes ten weeks or more to attain its full development. It is associated not only with tabetiform degenerations in the spinal cord, but also with degeneration in the sensory root of the trigeminal nucleus, and occasionally even with degenerative changes in the optic nerve. When we remember that both the syphilitic spirochæte of Schaudinn and the trypanosome of Bruce belong to the same family of organisms, the significance of Spielmeyer's observations is further enhanced.

When we come to the treatment of tabes, however, it must be confessed at once that we are on less secure ground. Unfortunately, even in early cases of tabes, energetic antisyphilitic treatment has but little effect. If, however, the tabetic patient still has signs of tertiary syphilis, it is our duty to push mercurial treatment for a time; but inasmuch as tabes is a post-syphilitic rather than an actual syphilitic disease, we cannot expect to cure it by syphilitic remedies pure and simple. Possibly a post-syphilitic antitoxin will yet be discovered which will enable us to arrest the advance of tabes. At the present time all we can hope to do is to increase the patient's resistive powers so that the disease may spontaneously come to a standstill; and we are more likely to influence the disease beneficially the earlier it is recognized. Nowadays the neurologist can usually make a diagnosis of tabes long before the patient has become ataxic, and even before the knee-jerks have disappeared. It is in such pre-ataxic cases that we are most likely to do good; but in most instances the patient is already ataxic before he seeks our advice. In such cases what is to be done for him?

NON-MEDICINAL TREATMENT.—Firstly, as to **Diet.** Most tabetics are thin. This may be partly a result of the muscular exertion necessitated by their ataxy, and partly, as Tobias and Kindler[2] suggest, the result of nervous and psychical excitement produced by the disease. In any case, the indication is for a specially nourishing diet, with abundance of milk, fats, and carbohydrates, and a moderate amount of meat. Artificial or forced fattening of such patients must, however, be avoided. Excessive obesity makes a tabetic worse, inasmuch as an excessive body-weight increases the difficulty of locomotion. On the other hand, stout tabetics—and they are uncommon—must not be artificially brought down in weight, since with diminished bodily nutrition the disease tends to get worse. We thus see that there is no special diet for tabes: a moderate standard of nutrition should be aimed at.

Massage is strongly recommended by some physicians, but it is of value chiefly in the haggard, emaciated cases, with poor general nutrition. Massage is also useful in certain cases with obstinate constipation, and it has a palliative effect upon certain other symptoms, such as lightning-pains, various "crises," etc.

As regards **Exercise,** over-exertion, in the experience of every neurologist, undoubtedly aggravates the disease. All games involving violent exertion must be forbidden, even to the non-ataxic tabetic, whilst gymnastic exercises, if uncontrolled by medical supervision, must also be strictly limited. Any exercises that we permit should be such as to strengthen the patient; if they exhaust him they are doing harm. Frenkel's special co-ordination exercises deserve particular mention. In certain cases the patient is enabled by means of these exercises to diminish his ataxia, or even to overcome it, though the latter is rare. Continued experience of this method of treatment, however, teaches us that certain conditions must be carried out in order to obtain the maximum benefit. The earlier these special exercises are commenced, the better are the results ; but we must pay particular attention not only to the patient's ataxy, but to the general state of his nutrition ; when the latter is going from bad to worse, special exercises must be absolutely forbidden. It is in slowly progressive cases, and more especially in those which have come to a standstill, that the best results are obtained. In patients who can afford it, a six-weeks' course of treatment should be recommended in a special medical gymnasium twice a year. Severe cases of ataxia should be sent away from home to a new environment whilst pursuing their "cure."

As to **Hydrotherapeutics** in tabes, Tobias and Kindler, whilst admitting that the effects are largely psychical, consider them of sufficient value to merit serious attention. Rapidly progressive cases of tabes, with violent lightning pains and "crises," are often aggravated by hydrotherapeutic measures, however mild. In other instances a certain amount of relief is obtained, mainly by the employment of warm full baths of a temperature of about 95° F., lasting from half an hour to an hour, and succeeded by an hour's rest in bed. Two or three such baths per week may be given. Stationary cases of the disease do well with warm carbonic-acid baths, such as those of Oeynhausen or Nauheim, twice or thrice a week. The temperature of successive baths is gradually diminished from about 95° F. to 86° F. The colder the bath, the shorter should be its duration. Robust individuals may have salt added to the carbonic-acid bath. In all cases extremes of temperature must be avoided : Turkish baths, for example, tend to aggravate the symptoms. For the relief of lightning pains, local cool spongings of a temperature of 64° to 60° F. for a few seconds at a time, are often of benefit. Even more efficacious are hot applications along the spine, at a temperature of about 104° F., lasting for half an hour at a time.

The effect of **Electrical Treatment** is variable. In some cases pains are relieved by the faradic brush, in others by the galvanic stream to the spine. Electric baths yield negative results.

All these methods, it may be objected, are but palliative, and do not attack the disease itself. This is true ; but in the present state of our knowledge palliative remedies are all that medical science has to offer.

Treatment of Tabetic Pains and Visceral "Crises."—These are often so distressing that any treatment which offers relief, even though it be frankly symptomatic, is deserving of our consideration. Various synthetic analgesics may be employed, e.g., **Phenazonum, Acetanilide, Salicyl-acetic Acid, Caffeine,** etc., singly or in combination. As a *dernier ressort* it may be necessary to administer **Morphine** hypodermically. This latter, however, tends to induce the morphia habit, and we are therefore reluctant to embark a patient on a regular course. Within the last few years good results have been obtained in some cases by the hypodermic administration of **Nitrite of Soda.** Encouraging results have been obtained in some cases, whilst in others no appreciable benefit has resulted. This is Raymond's[3] experience, and I can corroborate it from personal observations. The method of administration is as follows : A 2 per cent solution of the salt in sterile water is made. Of this 1 cc. is injected daily for ten days ; then comes a period of ten days without injections ; then a second series of 2 cc. daily for ten days ; then another ten days' interval ; then 3 cc. daily for ten days ; and so on until 4 cc. daily are given for ten days.

REFERENCES.—[1]*Münch. med. Woch.* Nov. 27, 1906, p. 2338 ; [2]*Berl. klin. Woch.* Mar. 4, 1907, p. 249 ; [3]*Med. Press*, Sep. 4, 1907.

TACHYCARDIA. (*See* HEART DISEASES.)

TAPE WORM.

(*Vol.* 1907, *p.* 554)—Kingston Fowler's treatment consists of rest in bed on a diet of beef tea and rusks for three days, with **Ext. Casc. Sagr.**, gr. ij, thrice daily ; on the fourth day at 5 a.m. he gives **Haust. Sennæ Co.**, ℥j, at 9 a.m., **Ext. Filicis Mas**, ♏xv in capsule, repeated at 9.15, 9.30, and 9.45. At 11 a.m., Haust. Sennæ Co., ℥j, is given ; at 1 p.m., if the worm be not passed, head and all, the dosage with filix mas is recommenced ; and if this fails, a third course of the drug may be given. After this there should be an interval of one day before giving the drug again.

TEETH EXTRACTION (Pain after).

(*Vol.* 1903, *p.* 634)—Syringe out the socket daily with a warm antiseptic lotion : apply hot fomentations externally ; and advise the frequent use of the following mouth wash ; ℞ Ac. Carbol., ♏x ; Sodii Bicarb., gr. xx ; Aq., ad ℥j ; to be mixed with an equal quantity of boiling water.

TERATOMATA.

Rutherford Morison, F.R.C.S.

David C. Hilton[1] says teratomata are described as tumours containing structures derived from two or all of the germ-layers. Dermoids are not teratomata, because they are only derived from epiblast, i.e., one layer. Of the recorded cases in the literature, one half are in a testicle and one fourth of the whole in the scrotum. The majority are not larger than a hen's egg, and have been found between the ages of 5 months and 64 years. On palpation they are either firm, or soft and doughy, depending on the character of the contents, which in some cases are fluid, in others solid. The solid material may be desquamated epithelium, hair, and sometimes teeth, cartilage, and bone.

The differential diagnosis is from all neoplasms, parasitic cysts, granulomatous masses, serous and sanguineous exudates, hæmatomata, from suppurative inflammatory swellings, and from an inguinal irreducible epiplocele. In the latter case a history of former reducibility will aid the diagnosis. He records a case of his own in a male aged 32, who for twenty-eight years had had a scrotal swelling, which had at various times been diagnosed as hernia or hydrocele of the cord. Injury to the tumour lead to its exploration, the mass being successfully removed. The seventy-nine reported cases are tabulated.

REFERENCE.—[1]*Ann. Surg.* Oct. 1906.

TESTICLE, TUBERCULOSIS OF.

Priestley Leech, M.D., F.R.C.S.

Keyes, junior, of New York,[1] records his observations on one hundred cases of tuberculosis of the testicle. His conclusions are as follows : (1) Clinically, testicular tuberculosis is never an isolated lesion ; it is only one feature of a general genital tuberculosis; (2) Sterility is frequent, if not constant, at the time the first testis is invaded, for there is evidence at this time of inflammation of the internal genitals; (3) Relapse in the opposite testicle occurs within a few years in eight or nine cases out of ten, and such relapse is in no wise postponed by early removal of the diseased testis; (4) Though suppuration seems often to result in a permanent cure of the local process, and though a chronic focus several years old is likely never to suppurate, one can in no case feel certain of a real cure unless the tuberculous epididymis has been removed; (5) The demoralizing effect of epididymectomy is not to be compared with that of castration, and slight tuberculosis of the testis may be depended upon to heal spontaneously after removal of the epididymis; (6) In his opinion **Epididymectomy** is the radical operation of choice, unless there is hyperacute generalized epididymo-orchitis, or unless the testis is destroyed by suppuration; (7) This operation has a beneficial effect upon the general health and upon tuberculosis of the internal genitals, and should be performed early in the disease, in spite of the fact that tuberculosis of the testis is often but an insignificant part of a generalized progressive tuberculosis, or is for many years the only active lesion of the disease; (8) If the patient is sterile, it would probably be wise to remove both epididymes, even though only one side is diseased.

Tuberculous Testicle in Infancy.—In an interesting article, Poissonnier[2] reviews the symptoms and pathology of this condition. In children genital tuberculosis is almost always an *orchitis*, the testicle, the epididymis, the vas deferens, and the tunica vaginalis being affected, while in the adult it is often an *epididymitis*, the testicle being only affected secondarily. Statistics as to the frequency of tuberculous testicle vary greatly, but it is not very common in childhood; its incidence diminishes after two years until puberty, when its frequency increases until adult age. It has been seen in the fœtus at term, and also in a child several days old.

As a rule one testicle only is affected; exceptionally, it affects an undescended testicle. The greatest factor is undoubtedly heredity. As regards the part first affected it is difficult to obtain exact information, but from the facts at hand it may be stated that in children it may commence in the head or the tail of the epididymis, in the periphery of the testicle, or in the body of Highmore; and that it does not commence uniformly as an epididymitis as in the adult. That infection by the blood-stream may occur cannot be denied, as where the organ is affected at birth; the testicle may also be invaded by way of the tunica vaginalis in cases of tuberculous peritonitis. The testicle and epididymis as a rule are both affected, and the tunica is more involved than is generally the case in the adult. The vas is frequently invaded, and vesicular and prostatic lesions have also been found.

The clinical forms are two: the acute and the chronic. Some authors say that the acute form is the more frequent, but Broca thinks that the chronic form with acute attacks is the more frequent. There is very often enlargement of the inguinal glands, and the cord is thickened. Sometimes the chronic form presents itself under the guise of a voluminous hydrocele, in the midst of which is a tuberculous epididymis. The disease may remain stationary for a long time, but sooner or later it either becomes caseous (when an abscess generally forms), or the organ becomes fibrous and the disease quiescent. The abscess may in some cases be absorbed, but generally the scrotum becomes adherent to the testicle, and the abscess ruptures, forming a fistula, which may close spontaneously. The prognosis is good if no other organs are seriously affected with the disease.

The diagnosis is between infantile syphilitic testicle, cancerous testicle, a testicular tuberculosis invading the cord, and an inflamed epiplocele. The syphilitic testicle is seen most frequently in the newly-born child (rarely in the older children), and is accompanied by other symptoms of hereditary syphilis.

TREATMENT.—The medical treatment is very important, and is that of other tuberculous lesions: good food, proper sanitary conditions, etc. As regards surgical intervention, opinions vary; Jullien and Rocher say that it is rarely, if ever, necessary, except for scraping a sinus or injection of iodoform into a hydrocele, and **Castration** ought only to be done in very rare cases. Felizet and Phocas, on the other hand, recommend castration if the disease does not yield to less vigorous treatment, and they say that often the child begins to improve and put on weight after the operation. When there is tuberculosis of other organs castration is useless.

REFERENCES.—[1]*Ann. Surg.* June, 1907; [2]*Gaz. d. Hôp.* Mar. 16, 1907.

TETANUS.

Purves Stewart, M.D.

The pathology of this disease is now fairly well established. The tetanus bacillus, which is of the anaerobic variety, i.e., incapable of growing in the presence of free oxygen, flourishes best at a temperature of about 60° F. and upwards. Tetanus, therefore, is preponderatingly a summer rather than a winter disease. The bacillus is specially common in the intestinal tracts of horses and cattle, and certain cases of the disease which have followed operations on the human intestinal tract suggest that in man also it is an occasional habitant of the intestine. It is important to remember that all wounds received in stables, or which are contaminated with horse-droppings or street dust, are particularly liable to be infected with tetanus. Blank-cartridge wounds, e.g., from fireworks, are another particularly fruitful source of infection. A mixed infection with other organisms enhances the virulence of the tetanus bacillus. Tetanus is a pure intoxication, its symptoms being due to the absorption of the tetanus toxin. Ordinarily the tetanus bacillus is only present at the site of the original wound, and the toxins are thence conveyed largely along the nerve-trunks. The period of incubation appears to be proportional to the length of the nerve-trunks along which the toxin is conveyed. The toxin seems to be absorbed primarily by the muscle end-organs, and is transported along the axis-cylinders of the nerve-fibres up towards the spinal cord. It is only slightly absorbed into the general circulation by lymphatic channels. It has been conclusively shown that tetanus antitoxin is able to neutralize free tetanus toxin outside the body, or in the circulating fluids of the body. Unfortunately antitoxin in the blood or lymph-stream, even in large amount, cannot neutralize the toxin passing along the axis-cylinders ; to do this it must be injected directly into the nerve-tissues.

These facts are of profound significance in the treatment of tetanus. Firstly, as Jacobson and Pease[1] have emphasized, every lacerated wound should be carefully purified, and if there be any possibility of tetanus infection, e.g., where dirt, manure, or road-dust may have been carried in, the wound should be excised and the tissue examined for tetanus bacilli. At the same time a preventive inoculation of **Antitoxin** should be given by intramuscular injection. These procedures are sometimes sufficient to prevent the development of tetanus, even in cases where tetanus bacilli have been demonstrated in the wound ; but not always. For example, Terrier and Mercadé[2] report two cases which proved fatal in spite of prophylactic injections of serum. Once tetanus has actually developed, antitoxin treatment by subcutaneous injection is less likely to be efficacious, though Hall,[3] Carter,[4] and Howard[5] have each recorded successful cases within the past year. In the fully developed disease we should now endeavour to apply our antitoxin directly to the nerve-tissues, either by intraneural injection into the nerve-trunks, or by intrathecal injection into the spinal canal. In one case of localized tetanus Küster[6] injected the antitoxin into the nerve-trunks of the affected part. Of course, in generalized tetanus, intrathecal injection is obviously better. Intracerebral injection through a trephine opening in the skull has no special advantages, and is attended with greater difficulties and risks. If opisthotonos and tetanic spasms have already supervened, some spinal anæsthetic, such as novocain, cocaine, or stovaine, may be administered by lumbar puncture, serving to mitigate the spasms and allowing us meantime to proceed with antitoxin treatment, preferably intrathecal.

Recently several observers have tried the effect of injections of **Spinal Anæsthetics** alone. Amongst these considerable attention has been devoted to **Magnesium Sulphate** (1 cc. of a 25 per cent solution for every 25 lb. of body-weight), in view of certain interesting results published by Meltzer[7] on the action of this salt in blocking impulses along nerve-fibres. Meltzer showed that magnesium salts have a marked inhibitory influence upon the conducting power of nerve-fibres, whether afferent or efferent. Magnesium sulphate can therefore be employed for spinal anæsthesia, though he admits that its action is slow (requiring three or four hours for total anæsthesia). On the other hand, the drug is very slowly eliminated, and its inhibitory action is therefore prolonged. Blake[8] records a successful case of tetanus treated in this manner, and refers to three other unsuccessful cases. Franke[9] has also had a successful case, three injections in all being administered, at intervals of five or six days. After each injection opisthotonos was alleviated, pain was relieved, and the tetanic paroxysms for the time disappeared. But on the whole, whilst spinal anæsthetics are of great value and often alleviate the symptoms, they should not prevent us from persevering with antitoxin treatment either by hypodermic, or, better, by intrathecal injection. Magnesium sulphate offers no special advantages over other spinal anæsthetics, such as a mixture of **Novocain and Adrenalin,** or **Cocaine and Morphine,** as described in last year's *Medical Annual.*

REFERENCES.—[1]*Ann. Surg.* Sept. 1906; [2]*Rev. de Chir.* Jan. 1907; [3]*Brit. Med. Jour.* Mar. 9, 1907; [4]*Ibid.*; [5]*Ibid.*; [6]*Germ. Surg. Congr.* 1905. [7]*Berl. klin. Woch.* 1906, No. 3; [8]*Ann. Surg.* Sept. 1906; [9]*Centr. f. inn. Med.* April 6, 1907.

TETANUS, INFANTILE. (*See* NEW-BORN, DISEASES OF.)

TETANY.

(Goodhart and Still, *Diseases of Children, p.* 600, 1902 *Ed.*)—Treat the underlying conditions (especially gastro-intestinal disorders and rickets in infancy, and dilatation of the stomach in adults). If the spasm is painful, **Opium** may be used (Pulv. Ipecac. Co., gr. ss; Hyd. c. Creta, gr. ss; Ft. Pulv.; one thrice daily, for an infant, with or without bromides or chloral. For the form occurring in older, neurotic children: ℞ Potassii Bromidi, gr. v; Sodii Sulph., gr. xv; Aq. Chlorof., ad ʒij; every four hours, may be given to a child of 6 during the spasm. Between the attacks give **Nux Vomica,** and attend to the general health.

TIC DOULOUREUX.

(*Vol.* 1905, *p.* 430)—Hammond speaks well of the use of **Strychnine** in large doses, beginning with gr. $\frac{1}{40}$, and raising it gradually till gr. $\frac{1}{2}$ or more is taken daily. (*Vol.* 1899, *p.* 559)—Bergonie applied the **Constant Current** with success, as far as immediate relief was concerned, in 15 cases. Accumulators or piles were used instead of batteries, and a current of 35 to 50 ampères employed. The positive electrode is to be of such a kind and size as to be moulded over the entire painful area. Each application is to last 15 to 30 minutes.

TINNITUS AURIUM.

(*Vol.* 1907, *p.* 41)—Where this is a symptom of otosclerosis, **Valyl,** in 2-gr. capsules, three to nine daily, is useful. (*Vol.* 1900, *p.* 178)—Mendel has employed **Tincture of Cimicifuga Racemosa** (♏xv–xxx per diem) with success. (*Vol.* 1902, *p.* 256)—Remember that tinnitus may be due to a plug of wax in the outer ear pressing on the drum. (*Vol.* 1892, *p.* 216)—**Bromides** are often valuable.

TONGUE, CANCER OF.

Priestley Leech, M.D., F.R.C.S.

Poirier[1] records the results of thirty-two cases of cancer of the tongue on which he has operated during the last few years. In eight there is at present no recurrence, after a lapse of from several months to several years. From these statistics (they were all advanced cases) Poirier concludes that cancer is curable provided it is attacked in the early stages; in cases of doubt a piece should be removed and examined microscopically, and if cancer is found operation should be immediate.

Berger[2] says removal of cancer of the tongue is one of the severest operations, but it is followed sometimes by lasting cures. He quotes four of his own cases where no recurrence has taken place after six, eight, ten years, and more. The contra-indications to operation are the extension of the cancer to the epiglottis and its neighbourhood, the invasion of the pillars of the fauces and the tonsils, the adhesion of the cancer to the inferior maxilla, the invasion of the two sides of the tongue beyond its anterior half, diffuse glandular engorgement, and inflammation.

Cornil[3] says it is difficult to appraise the degree of malignity of a cancer of the tongue by the microscope. One must take notice not only of the structure of the new growth and of the kind and variety of the neoplasm, but also of its seat, and in sarcomas and carcinomas there are various degrees of malignity. For example, fibromas can degenerate into sarcomas, as is seen in fibromas of the abdominal wall. Tubular or alveolar epithelioma is certainly the most dangerous, as it recurs and becomes generalized within three to five years; nevertheless, in its scirrhous form one sees—rarely it is true, but it has occurred—a survival of the patient for ten, fifteen, and twenty years where there has been no surgical intervention. The epithelioma with Malpighian cells and epidermic nests, the termination of which is habitually fatal when it is situated in the tongue, the lip, or the anus, is, on the contrary, very benign when it develops on the cheek, the nose, or the forehead. The epithelioma with cylindrical cells has a rapidly fatal termination when it is situated in the stomach or rectum, but it is much less dangerous when it occurs in the breast.

References.—[1]*Sem. Méd.* Oct. 31, 1906; [2]*Ibid.* No. 46, Nov. 14, 1906; [3]*Ibid.* Nov. 21, 1906.

TONGUE, TUBERCULOSIS OF.

Priestley Leech, M.D., F.R.C.S.

Dr. Della Vedova[1] publishes two cases of this disease seen in the clinic of Professor Durante, of Rome. He thinks that tuberculosis of the tongue is not so rare as many suppose. The first notice of this disease dates from 1767, when Morgagni described a case which at the autopsy showed also pulmonary tuberculosis, and he also relates a similar case of Lorenzo Mariano. A diagnosis of epithelioma is often made, and Della Vedova has made the same mistake. His cases were in men, aged respectively 37 and 33. A diagnosis of epithelioma was made in both, and a portion of the tongue excised. Both men were healthy, and there were no signs of tuberculosis in other organs. In the first case there was a circumscribed ulcer, and in the second tuberculo-fibrous glossitis diffused over a large part of the dorsum of the tongue.

Primary tuberculosis of the tongue has been denied, but facts prove its existence. It may commence in the lingual parenchyma or in the mucosa. In the first form the disease slowly increases, and, it may be after years, it opens on the mucous membrane, forming either a large ulcer or a fistula. This form may be easily mistaken for syphilitic gumma, and the diagnosis is made by the frequent multiplicity of syphilitic gumma, the preference of tuberculosis for the tip of the tongue and of gumma for the base, and the presence of numerous fissures with hard, irregular, prominent borders which surround a syphilitic gumma. Actinomycosis, which is more rare, may complicate the diagnosis. The presence of yellow bodies in the pus in the later stages is characteristic. As regards the neoplasms, the most frequent mistake is to make a diagnosis of epithelioma; lipoma, fibroma, and cysts may also cause some embarrassment to the surgeon. The only true criterion in doubtful cases is a microscopical examination of a portion of tissue taken from the floor of the ulcer.

Arturo[2] reports a cold abscess in the tongue of a child seven years old, in which a diagnosis of cyst was made and a cure obtained by withdrawal of the fluid and injection of Durante's iodo-iodurated solution.

REFERENCES.—[1]*Il Policl.* Fasc. 3, vol. xiv. C. p. 89; [2]*Ibid.* Fasc. 40, 1906.

TORTICOLLIS, SPASMODIC.

(*Vol.* 1905, *p.* 581)—This is not a satisfactory condition to treat. Try **Rest in Bed**, with **Overfeeding**, **Massage**, and **Local Galvanism**. **Bromides**, **Chloral**, and other sedatives may be used. **Atropine** injected into the affected muscles, beginning with gr. $\frac{1}{200}$ and rising to gr. $\frac{1}{45}$, checks the spasm. **Division of the Affected Nerves** generally, but not invariably, cures the condition, but, of course, paralyses the affected muscles.

TRACHEOBRONCHOSCOPY. (*See* BRONCHI AND LARYNX.)

TRICHORRHEXIS NODOSA.

E. Graham Little, M.D., F.R.C.P.

Lassueur[1] corroborates the opinion of Sabouraud (reiterating that of Erasmus Wilson), that this condition of the hair is due to mechanical or chemical injury to the shaft of the hair, and not to the parasitic causes which have from time to time been alleged. He found that the typical appearance of trichorrhexis nodosa could be produced in the hair of the moustache in four cases by simply using excess of soap. The same appearances are seen in almost every shaving-brush that has been in use for any length of time. Lassueur found it in the shaving-brushes of fifty-six patients; in only one of the owners was the disease observed.

Adamson,[2] by a pretty experiment, demonstrates still more forcibly the accuracy of Wilson's view, "that the fractures or nodes are the result of mechanical injury to a hair of damaged nutrition." If a healthy hair, and a hair deemed unhealthy (e.g., of alopecic, trichophytic, or seborrhœic derivation) be struck with a paper-knife, the healthy hair fractures simply; the unhealthy hair with the nodose "compound" fracture, to which this lengthy name is given.

REFERENCES.—[1]*Ann. de Derm. et de Syph.* Nov. 1906, p. 211; [2]*Brit. Jour. Derm.* Mar. 1907, p. 99.

TRICHOSIS, CERVICAL MYELOPATHIC.

E. Graham Little, M.D., F.R.C.P.

Gowers[1] reports a unique case of abnormal growth of hair in the lumbar region, the hirsute area being triangular in shape, and unilateral, the base of the triangle, parallel with the spine, extending from the sixth cervical to the third dorsal. The hair was almost an inch long, and had been present since birth in the patient, who was forty-one years old when seen. The right arm and leg were a little weak and rigid, but sensation was normal here and on the trunk to the level of the shoulders. At this level there was a band of analgesia, but tactile sensibility was unimpaired, that is, there was definite evidence of accompanying cervical syringomyelia. Similar growths of hair have been recorded in cases of spina bifida occulta, but without the unilateral distribution described here.

REFERENCE.—[1]*Brit. Med. Jour.* June 1, 1907.

TROPICAL ULCER.

J. W. W. Stephens, M.D.

Bettmann[1] gives a description of this affection. It occurs singly or even to the number of a hundred. It begins as if there were an insect bite. A flat papule slowly develops, which after some months may be re-absorbed, or which more commonly proceeds to ulcerate. In any case a cicatrix results from the healing, the process lasting nine months to a year. As the disfiguration which results is unsightly, especially on the face, where the process is not uncommon, children are frequently inoculated on other parts of the body, so as to avoid this disfigurement. The process is usually a local one, but complications—such as glandular swelling, lymphangitis, phlegmon, erysipelas, and even severe sepsis —may ensue. The disease is most common in the rainy season, and affects chiefly uncovered parts of the body. The diagnosis is not always easy except by a microscopical examination. For this purpose it is not necessary to excise a portion, but expressed blood-drops show the parasite, the *Helcosoma tropicum* of Wright, which morphologically is extremely like the Leishman-Donovan body. Dried films are made, and stained with Romanowsky. The parasites are 2 to 3 μ by 1 to 1·5 μ, and show the characteristic two nuclei, one large and the other small and rod-like. The parasites occur mainly in large mononuclear cells with eccentrically placed, feebly staining nucleus; also in polynuclears, and in some cases apparently free.

Oudiourminsky[2] treats cases of tropical ulcer by **Bier's Method.** The ulcer is first cleaned by hydrogen peroxide or sublimate. and the whole of the involved surface is then covered with a cupping apparatus. This is not exactly described, but by its means 5 to 30 cc. of secretion are extracted. At the end of ten minutes the ulcer is covered again with a compress soaked in **Hydrogen Peroxide.** The cupping is now repeated until the wound becomes clean. At the end of this treatment the ulcer is blackish. A compress of **Carbolic** or **Ichthyol** is then put on. The treatment is repeated on the following day. Ulcers dealt with in this way heal much more rapidly than they otherwise would; ten to fifteen days suffice to heal a completely formed ulcer; only five to eight days are needed in the initial stages.

Nathan-Larrier and Nikolaides[3] state that the parasite can be found *in the blood* in the neighbourhood of the tropical ulcer.

REFERENCES.—[1]*Münch. med. Woch.* Feb. 1907; [2]*Sem. Méd.* Sept. 11, 1907; [3]*Gaz. d. Hôp.* 1906, p. 1614.

TRYPANOSOMIASIS.

J. W. W. Stephens, M.D.

K. H. Kutscher[1] gives a summary of some of Koch's earlier work in connection with the German sleeping-sickness commission in East Africa and subsequently in Uganda. The observation of laymen that glossinæ sucked the blood of crocodiles was confirmed by Koch. In a later paper it is suggested that by destroying crocodiles (e.g., by collecting their eggs) an important source of food for the flies may be destroyed! Koch confirms the discovery of Greig and Gray that gland-puncture of enlarged glands is of great diagnostic importance. The treatment adopted was that of 0·5 gram of **Atoxyl** on two consecutive days with ten days' interval. The trypanosomes disappear out of the blood quickly, and there is a general improvement of symptoms.

J. E. S. Moore and A. Breinl[2] describe the occurrence of a resistant form of trypanosome in the cases of *T. gambiense* in animals. They occur mainly in the bone-marrow and spleen at a time when parasites are disappearing from the circulation. They consist of a nucleus and karyosome embedded in a thin sheath of protoplasm. They are the bodies described by other observers as "free nuclei." From these forms eventually develop trypanosomes. They indicate then that this trypanosome has a cycle of its own in the body. The authors do not believe in the existence of male, female, and indifferent trypanosomes, as described by many authors.

A. Kinghorn and J. L. Todd[3] discuss the means at present available for combating sleeping sickness: (1) The existence of an area 300 yards in width, free from rank undergrowth or grass, will do a great deal to keep it free from tsetses; (2) The value of atoxyl in treatment is still problematical; (3) Villages of "detention" and treatment should be situated in infected areas, but in places free from tsetse flies. In these villages should be isolated all local cases of sleeping sickness indigenous or introduced; (4) Inspection posts should be established to prevent infected persons from entering a district. Infected cases already introduced must be expelled, and it must be made an offence for employers of labour to have any person under his control with enlarged glands (if these are proved to be due to infection with *T. gambiense*).

A. Breinl and J. L. Todd[4] make the following recommendations with regard to the treatment of sleeping sickness by **Atoxyl.** They make a 20 per cent solution of atoxyl in sterile normal saline. The solution is warmed to blood-heat just before use, in order to dissolve the drug completely and to prevent the pain which occasionally occurs at the seat of injection. Give 0·6 cc. subcutaneously for four days. On each of the four succeeding days give 0·8 cc. Then raise the dose for a week to 1 cc. each day. Now give 1 cc. every two days for a fortnight. Then reduce to 1 cc. twice a week until all symptoms have disappeared and the patient's blood is negative to subinoculation into susceptible animals. Afterwards 1 cc. should be given weekly for as long a period as possible. Should signs of poison-

PLATE XXX.

TUBERCULOSIS.

OPHTHALMIC AND CUTANEOUS TUBERCULIN REACTION.

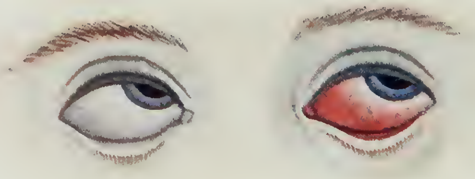

Fig. A.

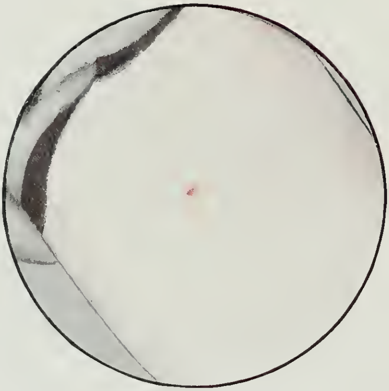

Fig. B.

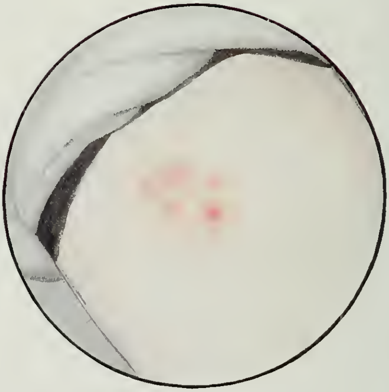

Fig. C.

ing or unfavourable symptoms arise, the same doses should be given, but less frequently. All solutions should be kept in dark (brown) bottles, and made up fresh each week

REFERENCES.—[1]*Berl. klin. Woch.* Jan. 7, 1907; [2]*Lancet*, May 14, 1907; [3]*Ibid.* Feb. 2, 1907; [4]*Brit. Med. Jour.* Jan. 19, 1907.

TUBAL PREGNANCY. (*See* FALLOPIAN TUBE.)

TUBERCLE OF THE EYE. (*See* EYE IN RELATION TO GENERAL DISEASE.)

TUBERCULOSIS, DIAGNOSIS OF. (*See also* EYE IN RELATION TO GENERAL DISEASE.)

R. W. Philip, M.D., F.R.C.P.

A considerable addition has been made to existing diagnostic methods in relation to tuberculosis by the recent adaptation of the tuberculin test in the cutaneous reaction of Von Pirquet, and the further modification of the latter in the ophthalmic reaction of Wolff-Eisner and Calmette.

With regard to the *cutaneous reaction*, Von Pirquet[1] found that if the skin of the tuberculous subject be gently scarified as for ordinary vaccination, and tuberculin be applied to the scratched surface, a reaction occurs at the seat of inoculation with scarcely any constitutional disturbance, or traceable local reaction in the primarily affected area (lungs, glands, etc.). Non-tuberculous patients do not react. The test is of special value in the case of young children (in whom the likelihood of old tuberculous lesions is less than in adults), regarding the nature of a doubtful condition, e.g., a possible tuberculous peritonitis. The test is likewise serviceable, as affording corroborative proof in other cases where, although physical signs of lung disease are present, it is impossible, for one reason or another, to determine directly the presence of tubercle bacilli.

Von Pirquet recommends the use of Koch's original tuberculin in 25 per cent solution, the diluting medium being 1 part of a 5 per cent solution of carbolic acid and glycerin, and 2 parts of normal saline solution.

Usually towards the end of twenty-four hours, a small red projection appears at the site of inoculation. The appearances presented at this time are indicated in *Plate XXX, Fig. B.* During the following day infiltration is more definite, and a small red papule develops. The colour is at first vividly red, tending to fade in the course of a few days. In extra sensitive patients the area of injection is larger. The exudation may be more marked. The skin may be raised in wheal-like fashion, surrounded by a red areola. Occasionally a more vesicular eruption occurs round the primary area (*Plate XXX, Fig. C*, from a drawing of a patient on the third day). As the infiltration becomes less, the patch may show more or less definite desquamation. Finally the infiltration and scales disappear, leaving a small area of pigmentation, which may remain for weeks. The reaction commences in most cases within twenty-four hours, but may be delayed until the end of the second day.

There can be little doubt that the reaction is of specific nature. It has appeared in every case but one out of a considerable series of probable tuberculous cases in which its value was tested by the present reviewer. In control cases it was almost uniformly absent. This is in correspondence with the observations of Von Pirquet, who found on post-mortem examination of twenty-three inoculated children who had not reacted, that there was no evidence of tuberculosis. On the other hand, in cases where reaction had occurred and a post-mortem examination was obtained later, tuberculosis was determined in every instance with one exception. It is of interest to note that the reaction is sometimes absent in cases of tuberculous meningitis, tuberculous caries, and advanced pulmonary and general tuberculosis, both in children and adults. A similar observation has frequently been made in respect of the failure of such cases to react to tuberculin injected subcutaneously.

The method, if practised from time to time, say every six months, in the case of young children, would be valuable as determining immediately the advent of tuberculosis, and thereby rendering early treatment possible.

The *ophthalmic reaction* is obtained by an adaptation of the cutaneous test. It is more readily applicable in the case of young children, because it avoids the necessity of cutaneous scarification. If a minute quantity of dilute tuberculin be instilled between the eyelids, a marked reaction occurs on the conjunctival surfaces of the tuberculous subject. The solution recommended by Calmette[2] is prepared by precipitating tuberculin in alcohol. The precipitate is dried, and of this 5 milligrams are dissolved in 10 drops of sterilized water or neutral saline solution. Of this solution one drop is placed between the eyelids, preferably towards the inner canthus. In the non-tuberculous subject no definite change takes place. In the tuberculous patient, on the contrary—whether tuberculosis be latent or active—marked changes occur in from three to six hours.

The eye looks red, and some degree of swelling of the lids may take place. Congestion of the conjunctival surfaces gradually becomes more marked. The lachrymal caruncle becomes red and swollen. The appearances are indicated in *Plate XXX, Fig. A*, prepared from a drawing of a patient's eye at the end of six hours. In some cases there is more œdematous swelling, and there may be fibrinous exudate. Even a slight trace of pus has sometimes been observed. Subjectively, there is little disturbance. There may be a feeling of pricking or slight smarting. The congestive process passes away in two or three days time. More rarely, a severer inflammation supervenes, approaching a true ophthalmia, which may last for a week. The reaction is occasionally delayed for from one to two days.

The test is delicate and reliable. It is of ready application in the case of irritable, excitable children, where other methods of diagnosis may be interfered with. Taking a considerable statistic, a reaction seems likely in 95 per cent of presumably tuberculous cases. In 81 per cent of cases in which tuberculosis was suspected but could not otherwise be certainly demonstrated, the reaction occurred. The writer has found it of particular value in the separation of a number of cases in which there was difficulty of diagnosis between tuberculosis and rickets.

REFERENCES.—[1]*Wien. klin. Woch.* 1906, xix. p. 1407. *Ibid*, 1907, xx. p. 1123; [2]*C. R. Acad. des Sciences*, 1907, vol. cxliv, p. 1324; *Ibid*, vol. cxlv, p. 298.

TUBERCULOSIS, PULMONARY.

R. W. Philip, M.D., F.R.C.P.

ETIOLOGY AND PATHOLOGY.

Channel of Infection.—Much discussion has taken place as to the channel of infection in tuberculosis. Doubt has been raised as to the more generally accepted view that pulmonary tuberculosis is usually caused by inhalation. Aufrecht,[1] after discussing the various hypotheses, emphasizes the tonsils as a specially frequent place of entrance, and indicates his belief that from the tonsils the organisms pass by way of the lymphatics to various glands, and thence to the vessels of the lung. He expresses the view that the inhalation theory of pulmonary tuberculosis is no longer tenable. Calmette and Guérin,[2] as the result of feeding young and adult bovines with bovine tubercle bacilli, introduced through an œsophageal tube, conclude as follows: (1) Animals readily contract tuberculosis by the intestinal route, not only in early but in adult life, without exhibiting in the walls of the digestive tube visible lesions in evidence of the passage of the bacilli. (2) In young animals, the bacilli are readily arrested in the mesenteric glands: in some cases, infection remains localized there for a longer or shorter period, and may terminate by healing; in other cases, it leads to the formation of caseous tubercles, and travels further by the lymphatics to the main lymphatic circulation. (3) In adult animals, the defensive action of the lymphatic glands is much less effective; the bacilli are more frequently carried along with the leucocytes into the main lymph-stream, and thence by the pulmonary artery into the lungs. (4) The so-called primary pulmonary tuberculosis of the adult is most frequently of intestinal origin. (5) Of all the modes of infection, that by the digestive tube is the most effective. In keeping with this, Calmette, at the International Conference on Tuberculosis (Vienna, 1907), dwelt on the difficulty of producing experimental pulmonary tuberculosis by inhalation experiments.

On the other hand, Flügge,[3] in a number of contributions, emphasizes the significance of inhalation as the leading avenue of infection. He finds that pulmonary tuberculosis can be produced experimentally by inhalation of air containing comparatively few tubercle bacilli in droplets of fluid. These are carried by inhalation into the finest bronchioles, as can be shown by fresh inoculations made from terminal bronchi. While the presence of a comparatively small number of bacilli in the air inhaled suffices to produce pulmonary tuberculosis experimentally, the quantity of bacilli required to produce manifest symptoms of disease by ingestion with food must be enormously greater. The appearance of symptoms and the fatal termination are much longer delayed when entrance is effected by ingestion. This negatives the contention of those who take the opposite view, namely, that inhaled bacilli really act through becoming arrested in relation to the tonsils and other portions of the throat. On the contrary, Flügge believes that, in the case of ingestion experiments, probably inhalation of minute portions of material containing bacilli takes place, leading to a more rapid development of pulmonary tuberculosis than has been observed in tuberculosis induced by ingestion pure and simple. Flügge concludes, as the result of prolonged experimental observations, that inhalation is a far more likely and dangerous channel of infection than is ingestion. He admits the occurrence of intestinal infection through the consumption of tuberculous milk or butter, or other agents contaminated with tubercle bacilli ; but he believes the more extensive source of infection to be the large quantity of droplets containing tubercle bacilli coughed out by the tuberculous patient, and mixed with the atmosphere of the dwelling room. He thinks the danger from dust containing tubercle bacilli is much less. In close intercourse with the tuberculous patient in confined atmosphere, there is frequently afforded opportunity for the inhalation of such droplets containing tubercle bacilli, as, for example, between mother and child, husband and wife, and persons working in the same factory.

In relation to this, a good deal of experimental work has been undertaken as to the course followed by dust-particles in their passage to the lungs. Here, too, curiously divergent views have been expressed. The classic researches of Arnold are cited again and again. These, as is well known, went to show that dust reaches the lungs directly with the air, and that from the alveoli it penetrates into the lymph vessels, and thereafter into those parts of the lung which present the most likely seat for lymphatic infection. Thus Tendeloo[4], after discussing various views, endorses that of Arnold, and expresses his belief that the same course is followed by the tubercle bacilli in the great majority of cases. Similarly, Feliziano[5] concludes, as the result of experiment, that ingestion of colouring matter, such as coal-dust and carmine, does not lead to corresponding pigmentation in the lung. Küss and Lobstein[6] similarly express the view that anthracosis of the lung is due to inhalation, and not to ingestion of atmospheric dust. They show that only insignificant pigmentation of lung can be induced by ingestion, and that true anthracosis is produced undoubtedly by the direct penetration of coal or other dust into the pulmonary alveoli. On the contrary, Calmette, Vansteenberghe, and Grisez,[7] as the result of experiment, conclude that very fine, coloured dust, introduced into the alimentary tract, traverses the mucous lining and is rapidly transported by lymph- and blood-vessels to the lung, where it remains for varying periods. They found that six hours after ingestion of coloured dusts, corresponding pigmentary changes could be found, especially under the visceral pleura.

Summing up the present-day view as to the channel of infection, Weichselbaum[8] concludes that the tubercle bacillus can penetrate the human organism by a variety of channels :—(1) By inhalation directly into the bronchioles and pulmonary alveoli, or by way of the bronchial glands through the blood- and lymph channels into the lung ; (2) By penetration through the mucous membrane of the mouth, nose, tonsils, throat, into the neighbouring lymphatic glands, and thence by the lymph-channels, or may be blood-channels, to the lungs ; (3) By ingestion of tubercle bacilli into the lower part of the gastro-intestinal tract, either along with food, or swallowed, e.g., in relation to discharge, with resultant production of intestinal tuberculosis ; or, apart from this, bacilli may pass through the intestinal lining membrane, and infect neighbouring glands, and thence pass by lymph- or blood-channels to bronchial glands and lungs ; (4) By penetration through other mucous membrane, as, for example, conjunctival or urinogenital, or through skin, with involvement of neighbouring glands and passage to more distant points by lymph- and blood-channels ; (5) By passage from a tuberculous mother through the placental circulation to the fœtus. This is relatively rare. In relation to these various possibilities, it must be kept in view that tubercle bacilli do not always produce anatomical changes at the point of entrance. Further, the bacilli may not be intercepted by the proximal group of lymphatic glands. They may pass through one or several groups before their progress is arrested. Even when arrested, the local process may be comparatively slight, e.g., an apparently simple hyperplasia of the gland. Indeed, the bacilli may remain perfectly latent for a very long time. This renders it difficult later on to draw absolute conclusions from the seat of more manifest tuberculous alterations, or from their degree, as to the source or channel of infection. The preference which the bacilli show for the apex of the lung cannot be accepted as an argument for their entrance by inhalation, or against other methods.

In keeping with this, are Griffith's[9] observations made for the Royal Commission on Tuberculosis, which have led to the following conclusions : The introduction of tubercle bacilli into the alimentary tract is not necessarily followed by the development of tuberculosis, and, when fed with tuberculous material, the most susceptible animals may escape infection ; the bacilli in such cases either pass straight through the canal, or, if absorbed, are taken up by leucocytes and destroyed. When tubercle bacilli are absorbed from the alimentary tract, either through the tonsils and pharyngeal mucous membrane, or through the intestinal mucous membrane, they may remain in the mucous membrane and set up characteristic tuberculous lesions, or they may pass through the mucous membrane into the nearest glands and leave no trace of their progress. Furthermore, it has been conclusively shown that tubercle bacilli which have been ingested may within a very short time find their way into the lungs, where they set up tuberculous lesions ; pulmonary tuberculosis so introduced may or may not be accompanied by lesions in the mucous membrane of the alimentary tract, or glands in connection with it.

In all species, whenever generalized tuberculosis is produced by feeding, the lungs are usually affected, often to a greater extent than any other organ in the body. The bronchial glands almost invariably become affected after the lungs ; in none of the experiments is there any evidence that the reverse has occurred ; in a few instances lesions have been found in the thoracic glands without apparent disease of the lungs.

The Influence of Injury in the determination of pulmonary tuberculosis is again cited by Attilio.[10] He quotes evidence and illustrative cases in favour of the view that injury of various kinds may be the determinant factor in producing activity of tuberculosis where, prior to accident, the process may have been latent. At any rate, it seems clear that injury may aggravate existing tuberculosis. The injury need not necessarily be directly in relation to the thorax.

The Influence of Rainy Winds on phthisis has been traced in twenty-three parishes of North Devon during forty-five years by Gordon and Harper.[11] The general result of their investigation is that populations exposed to prevalent high, rainy winds, have a heavier death-rate from phthisis than populations in more sheltered regions. A description of each parish is given in respect of exposure, soil, and tuberculosis statistics. The curves of rainfall and of phthisis mortality bear a remarkable resemblance. The contention is that the rainfall *per se* is not the important factor, but rather the combination of wind and rain. It may be pointed out with reference to these detailed and interesting observations, that to determine the true inwardness of relationship between the apparent cause and effect, most careful consideration is desirable of the results produced by the frequency of such high, rainy winds on the life of the inhabitants from day to day in respect, not only of out-door life, but of the admission of fresh air into the dwellings. In districts swept by high, rainy winds, there exists *a priori* the probability that the inhabitants will tend to protect themselves unduly in relation to air as compared with persons dwelling in relatively still districts.

A further attempt has been made by Rothschild[12] to trace a connection between the advent of pulmonary tuberculosis and the process of *ossification at the junction of the manubrium and the body of the sternum.* He is of opinion that fullness of inspiration is largely dependent on the extent to which this junction remains pliable. In proportion as ossification fixes this, freer ventilation of the upper portion of the chest is interfered with. This view is traversed by Hart[13] and by Lissauer.[14]

DIAGNOSIS.

The most significant addition to diagnostic possibilities, more especially in the case of young subjects, has been made through the cutaneous reaction of von Pirquet, and the ophthalmic reaction of

Wolff-Eisner and Calmette. These are considered under the preceding article. The *significance of tuberculin* by subcutaneous injection is illustrated by a number of observers. Hamman and Wolman[15] reproduce a number of charts, showing the delicacy of the test. They emphasize especially that a negative reaction may be taken as affording positive information, while a positive reaction affords one of the most satisfactory and convincing of all diagnostic methods. While this is granted, they rightly express the view that the tuberculin reaction can never take the place of careful and painstaking examination by other clinical methods. A similar view with detailed discussion is given by Labbé.[16] He recommends the tuberculin of Koch, the patient to be entirely free from fever when the test is made. The initial dose should not exceed 0·2 mgram. An elevation of one degree above the normal may be taken as signifying a positive reaction. If no reaction occurs, the same dose may be repeated three days later. If necessary, four successive injections may be made at similar intervals.

Of physical signs, Crispolti[17] gives a full description, illustrated by a figure, of the scapular angle sign of Baccelli, which is held to be of service in the diagnosis of latent tuberculous disease of the lung. The patient is seated with his back to the light, the head slightly bent forward, and the arms crossed in front, so that the respiratory movements on the two sides are readily compared. It may then be discovered that, in a case of early pulmonary affection, the superior internal angle of the scapula on the one side is elevated considerably less than on the unaffected side, especially in cases of apical tuberculosis.

Philip[18] has drawn attention to certain adaptations of percussion in the diagnosis and prognosis of respiratory disease. More especial stress is laid on what he has termed "*Tidal Percussion.*" This consists essentially in the practice of percussion alternately during expiration and full inspiration, and is applicable in respect both of the apices and bases of the lungs. For early diagnosis it is especially serviceable when practised at the apices. In such cases—it may be before actual percussion dullness is determinable—a limitation of the tidal difference at one or other apex may be noticed. As consolidation advances, even in slight degree, limitation of the tidal change becomes more marked. The practice of tidal percussion should be maintained in relation to the progress of the disease. As the disease becomes arrested, a considerable increase in degree and extent of resonance during full inspiration is frequently observed, and affords one of the most satisfactory indications of improvement. On the other hand, as disease advances, the amount of tidal percussion difference is reduced still further. The same observer recommends a *special line of percussion* for the determination of slight degrees of apical dullness. The procedure is as follows: the index finger of the left hand is used as pleximeter, and is placed horizontally across the apex of the lung from back to front in a plane at right angles to the vertical diameter of the lung. Percussion is practised with the middle finger of the right hand in a direction at right angles to the pleximeter. The pleximeter should be closely apposed, and percussion should be firm and sharp.

Solis-Cohen[19] draws attention to the desirability of *examination of the fæces* of tuberculous patients for the presence of tubercle bacilli. He follows the method recommended by Rosenberger. A spread of fæces is made, there being no effort at selection of any particular mass or portion. If the stool is solid, a small portion is mixed with sterile, distilled water. When dried and fixed, the spread is stained with carbol fuchsin for fifteen to twenty minutes in the cold. The excess of stain being drained off, Pappenheim's solution (consisting of a 1 per cent solution of rosolic acid in *absolute* alcohol, to which is added methylene blue to the point of saturation, and a small quantity of glycerin) is applied, and when the preparation is of the colour of the counter stain (methylene blue), it is thoroughly washed in water, dried, and mounted in balsam. Rosenberger believes that following the above technique obviates any fallacy with other bacilli.

Landis[20] discusses the diagnostic value of the exhibition of *iodide of potassium*, as described by Sticker, in cases of suspected pulmonary tuberculosis. A case is described in detail where a dose of 5 gr. was administered every three hours. On the third day the temperature rose abruptly, a cough developed, and sputum appeared containing bacilli, not hitherto obtainable. There was an extension of fine râles towards the upper part of the right lobe.

Lastly, a number of papers have appeared with reference to the application of *X rays* to the diagnosis of pulmonary tuberculosis, but no new facts of importance have been communicated. It is generally admitted that examination by X rays is chiefly of corroborative value, and cannot be admitted to replace in any sense detailed physical examination according to older methods.

TREATMENT.

I. PROPHYLACTIC.—A good many papers have appeared both in Europe and America, regarding measures for the prevention and treatment of pulmonary tuberculosis. Some of these urge the value of the sanatorium, others of the dispensary, and others of colonies. Each of these factors is admittedly of value. But what is of greatest significance in relation to the subject is the recognition that a successful solution of the tuberculosis problem is not to be found in any one of these factors separately, but in the successful combination and co-ordination of all. It is this which gives special value to what is known as the Edinburgh system.

If communities, as communities, are to benefit practically by the discovery of the tubercle bacillus to the extent which the discovery warrants, they must be willing to effect a vastly wider organization and co-ordination of measures than has been realized in most parts of the world. While the influence of wise sanitary measures in the reduction of the incidence of, and the mortality from, tuberculosis is freely admitted, the value of more direct anti-tuberculosis measures cannot be gainsaid. An effective scheme of organized and co-ordinated operations against tuberculosis should include, for larger centres, the following factors, in close organic relationship, as in the Edinburgh system, namely: ( ) Notification of the disease; (2) A tuberculosis dispensary; (3) A hospital for dying patients; (4) A sanatorium for selected patients with a view to cure; (5) A colony for the residence and guidance of patients in whom the disease is latent, or has been arrested, and for whom carefully selected and supervised employment is desirable.

1. *Notification of the Disease.*—There has been a growing feeling manifested in favour of notification. The experience of certain centres, notably of New York, which has had compulsory notification for ten years, subsequent to a shorter period of voluntary notification, and of Norway, which has had compulsory notification for some years, is strongly in favour of the principle. The system seems to have been carried out smoothly and efficiently. In keeping with this is the experience of certain towns in the United Kingdom which have introduced compulsory notification, such as Edinburgh, Bolton and Sheffield, and that of certain towns which have introduced voluntary notification, e.g., Bradford, Brighton, Leeds, and Liverpool.

From the official point of view, a noteworthy advance has been made by the pronouncement of the Local Government Board for Scotland.[21] to the effect that pulmonary phthisis is an infectious disease within the meaning of the Public Health (Scotland) Act, 1897. The sections of the Public Health Act applicable to other infectious diseases are thus applicable to pulmonary phthisis. It is hence within the power of the Local Authority, with the approval of the Board, to add pulmonary phthisis to the list of diseases notifiable under the Infectious Diseases Act (1889).

It must be kept in view that the procedure consequent on notification of pulmonary tuberculosis is not, and cannot be, a uniform one, as after the notification of the acute specific fevers. The necessary procedure will vary with each case. Considerable confusion has been introduced into the discussion of the subject by the suggestion that the natural resultant of notification is the segregation of all cases of pulmonary tuberculosis in special hospitals. On the contrary, in the large proportion of cases, notification need be followed by no special measures. It will be sufficient if it is known that the patient is supervised medically, and advised, not only as to measures of treatment, but also as to means whereby the risk of infection of other persons may be limited. In certain instances—relatively early cases—the patient would be recommended to place himself, for a longer or shorter period as may be necessary, in a sanatorium, with a view both to immediate improvement and to education in methods of treatment. Others, especially poor patients in advanced conditions, living in contracted dwellings, should be transferred to special hospitals for such advanced cases, in order that the spread of the disease may be limited as far as possible.

2. *Tuberculosis Dispensary.*—The tuberculosis dispensary must not be confounded with the ordinary out-patient department of a consumption or general hospital. As at present constituted, such out-patient departments are chiefly concerned with the treatment of individual patients, and have less bearing on the larger aspect of the tuberculosis problem. The tuberculosis dispensary should constitute for every city or district a centre to which persons of the poorer classes, affected by tuberculosis, should be directed. It should be the meeting-point of all other agencies in relation to tuberculosis. It should constitute "a bureau for receipt and distribution of information and assistance, and a clearing-house in respect of the vast amount of tuberculous material. To the dispensary, tuberculous patients of the poorer classes, and patients with chronic colds and persistent ill-health, should be invited. Tuberculous patients presenting themselves at infirmaries, hospitals, and other charitable institutions, should be directed to the tuberculosis dispensary. Employers of labour and heads of public works should be apprised of the existence of the dispensary, so that invalid employees may be directed thither. The dispensary should constitute a centre for the dissemination in the widest fashion of information regarding prevention and treatment. The dispensary should be in closest relationship with the sanatorium for early cases on the one hand, and the hospital for advanced cases on the other. It should be placed more or less completely under the direction of the Medical Officer of Health, and should form a separate well-defined department of public health activity" (Philip, *Brit. Med. Jour.*, Dec. 1, 1906.)

In addition to the advice and information afforded at the dispensary to patients, and the friends of patients, regarding methods of treatment and prevention, the patients' homes should be visited by, first, a physician, and secondly, a specially trained nurse, both attached to the dispensary, for the double purpose of treatment and of investigation into the state of the dwelling and general condition of life, and risk of infection. A practical schedule of enquiry under this head has been used for many years at the Royal Victoria Dispensary for Consumption, Edinburgh. "One of the doctor's duties in visiting is to examine into the health of other members of the family. It is remarkable how frequently two, three, or even more persons, not previously suspected, have thus been shown to be tuberculous" (*Brit. Med. Jour.*, Dec. 1, 1906). In one instance in the writer's experience, as many as *fifteen* patients, all related to each other, came under review and guidance, as the result of the initial visit of one patient to the dispensary. It is difficult to exaggerate the significance to a city of so far-reaching a system of investigation and supervision.

3. *Hospital for Advanced and Dying Cases.*—The advanced or dying cases constitute the great source of infection, more especially among the poor, residing in contracted, overcrowded dwellings. The statistics of the Royal Victoria Dispensary show that in 65·9 per cent of cases, one or several persons actually shared the same bed with the

consumptive patient. Such patients ought to be removed to a hospital reserved for advanced and dying cases.

In addition to the provision made by the parochial authorities for cases of consumption in the pauper classes, fifty beds have been set aside in the Edinburgh City Fever Hospital for the isolation of advanced cases. In the circular already referred to, the Local Government Board for Scotland insists that the isolation of such dangerous cases is a primary duty of the local authority It is, of course, clear that patients admitted to such hospitals should be retained in the hospital until the end.

4. *Sanatorium.*—The significance of the sanatorium is generally admitted. Indeed, sanatoria have bulked disproportionately in most anti-tuberculosis movements. Too much was promised by some of their more enthusiastic advocates. Already the overweening confidence in their efficacy has wisely moderated. In not a few directions the question is indeed asked whether the sanatorium is worth while. Such pessimism seems hardly credible to anyone familiar with the results of sanatorium treatment; for the fact is, that if treatment be commenced sufficiently early, it is exceptional when a patient does not improve satisfactorily. The chief difficulty lies in the lack of perfect comprehension as to what constitutes an early and suitable case. Patients are still frequently recommended to sanatoria who ought rather to be passed to hospitals for advanced or dying cases.

There are in Germany at the present time 87 public sanatoria for the common people, with 8422 beds, and 47 private sanatoria with 2000 beds. Statistics have been collected[22] establishing a comparison between cases which received no sanatorium treatment, and cases which, on an average, received sanatorium treatment for a period of six weeks. In spite of the difficulties of classification, these figures show results greatly in favour of sanatoria. Of the large number of cases thus represented, 63·2 per cent were rendered capable of work, as opposed to 47·7 per cent treated in the ordinary way. Of sanatorium patients only 11·7 per cent died, as contrasted with 41·4 per cent of non-sanatorium cases.

With regard to more permanent results of sanatorium treatment, Bardswell[23] publishes an interesting summary of results of 260 cases discharged after sanatorium treatment during six years from 1899 onwards. Of these 97, or 37 per cent, remained in their normal health; 50, or 19·2 per cent, were in either fair or poor health; 103, or 39·6 per cent, had died; and 10, or 3·8 per cent, could not be traced. Similar statistics are cited by other observers in different countries. From these it is sufficiently evident that the sanatorium constitutes an important division of the work.

The nature of the sanatorium régime is sufficiently known to make details unnecessary. Some difference of opinion seems still to exist as to the significance of rest on the one hand, and regulated activity on the other, in the treatment of the tuberculous patient. The truth really is that there is no general rule, and that each case requires to be judged for itself. There can be no doubt that at a certain stage, so soon as temperature and pulse records admit of it, carefully graduated activity is a therapeutic agent of first importance. There is much to be said as to the significance of *directed* activity because of its economic value, both to the patient as a preparation for future work after discharge, and to the sanatorium itself, towards the maintenance of which the patient is thus enabled to contribute. When the period of complete rest is past, the patient should be carefully introduced to graduated exercises, and presently to definite work. The nature and amount of such work should be as carefully regulated and prescribed as are the patient's medicines. The effect on the patient should be noted similarly. The results of increase in work should be reviewed in the same way as those of drug treatment, and the amount still further increased or lessened as the temperature chart, pulse, and other indications may suggest. This method of graduated activity has been elaborated in highly satisfactory fashion at Frimley Sanatorium, under the direction of Dr. Paterson.[24]

5. *Tuberculosis Colony.*—The cure of the tuberculous patient, and his continued well-being after the arrest of the disease, must, in some cases at least, depend on the possibility of his continuing the régime, and life of graduated activity, for a longer period than is usually possible in the sanatorium itself. Return to ordinary occupation is possible for many, but not for all patients. It is because of this that there exists the necessity for the establishment of working colonies for tuberculous patients. Such workers would remain at the colony under medical surveillance for one or several years, possibly for their life-time, according as results justified. There is every reason to believe that the colonies could be made self-supporting. The produce of the colony might suitably afford supplies to the sanatorium, and the two divisions of the scheme work together harmoniously and economically.

" It cannot be too strongly emphasized that the strength of such an anti-tuberculosis scheme lies especially in its organization and co-ordination. Each of the above factors is of value. Each department has its own sphere of operations. As isolated elements their possibilities are relatively limited. In proportion as the various departments are intimately connected and co-ordinated they each become more serviceable. The key to complete success in the campaign against consumption lies in the harmonious co-ordination of well-directed measures " (Philip, *Brit. Med. Jour.*, Dec. 1, 1906).

II. Climatic.—There have been a good many papers laudatory of various climates in relation to the treatment of tuberculosis. An interesting account of the climate of New Mexico, " Nature's Sanatorium for Consumption," is given by Carrington.[25] The author summarizes the advantages of New Mexico as follows : (*a*) altitude, (*b*) low relative humidity, (*c*) large percentage of sunshine, (*d*) cold, or cool nights, (*e*) moderate wind movements, (*f*) small precipitation, (*g*) rarity of fog, (*h*) well-drained soil. Ewart[26] once more dwells on the significance of marine climates in cases of surgical tuberculosis.

and latent or threatening cases of pulmonary tuberculosis, while the result of such climates on other varieties of pulmonary tuberculosis is more dubious. It may safely be said that for the great proportion of cases, inland climates with pure, still, and relatively dry air, are more serviceable.

III. Dietetic.—A number of papers have appeared emphasizing the need for *rational feeding* in tuberculosis, as opposed to the over-feeding recommended by some authorities. There can be no doubt that forced feeding, especially the pushing of excessive supplies of milk, is open to question. Thereby a condition of soft adiposity is induced, which is of very doubtful value to the patient. What is mostly to be sought for is improvement in intestinal metabolism, and increased nitrogen retention. It is gain in muscle, not loading with fat, that is desired.

IV. Physical.—The significance of **Regulated Lung Gymnastics** in suitable cases has been long recognized. The beneficial effect of well-conceived respiratory exercises is remarkable. Various contributions describing the use of such pulmonary gymnastics have appeared. Thus Minor[27] reproduces a large number of tracings showing the increased extension of thorax effected by the regular practice of deep respiration and effective expiration. He rightly presses for such exercises as being of great prophylactic value in childhood. They are also most serviceable in increasing the functional value in cases of arrested pulmonary tuberculosis. The various exercises are described.

V. Medicinal.—There is convincing evidence that **Tuberculin** in one or other form is returning to favour. This is due in part to the continuous work of numerous observers who have maintained its use ever since its first announcement, and whose results have gradually afforded strong cumulative evidence in support of its therapeutic value. It is also due to the beautiful and interesting work of Sir A. E. Wright in relation to opsonins, referred to elsewhere. It should be kept clearly in view that, while this latter work has a most important bearing on our knowledge of the action of tuberculin, the detailed method associated with Wright's name for the determination of the opsonic index is *not an essential* part of the therapeutic application of tuberculin. Prolonged experience justifies the statement that, apart from the estimation of the index, other clinical evidence, including temperature, pulse, patient's aspect, local symptoms and signs, will suffice for the regulation both of amount and frequency of dosage. Thus, of Koch's original tuberculin, treatment may be commenced with 0·1 mgram, diluted with normal saline solution, or ½ per cent carbolic acid. Of Koch's T.R. tuberculin, the initial dose is 0·002 mgram of the dry product. Of other tuberculins, that of Béraneck deserves special note. Treatment is begun with an injection of, say, 1 cc. or ½ cc. of 1–100,000. This is in each instance less than the dose first proposed. Experience has shown that it is well to keep on the low scale of dosage. It will be commonly found proper to repeat the same dose in from seven to fourteen days. Increase of dosage is not immediately necessary, and in any case should be very gradual.

Apart from this increase of evidence as to the value of tuberculin, there has been added little of therapeutic value during the year. Mendel[28] advances a further plea for the well-recognized method of treatment by **Intratracheal Injection.** The method, introduced some twenty-five years ago, has fallen perhaps a little into the background. Its value in respect of symptomatic benefit is undoubted, but—*pace* Mendel—it cannot be spoken of as *specific* in any true sense. Mendel recommends the daily injection, for a period of about a month, of some 9 cc. of **Eucalyptol** dissolved in oil, as proposed twenty years ago by the present reviewer. Mendel gives three separate injections of 3 cc. each. He draws attention to the remarkable sense of freedom of respiration which immediately follows the injection. Vnoukov[29] recommends **Hypodermic Injections** of a mixture of **Petroleum** and **Ether.** The recommendation is the result of observations both on animals and tuberculous patients. His formula is : Castor oil, 95 cc. ; Sulphuric ether, 5 cc. Mix. Then add 550 drops of a mixture of equal parts of petroleum and ether, and 5 gr. of menthol. (These proportions must be carefully maintained.) Of this preparation, 2 cc. are injected subcutaneously.

A good deal of writing has taken place regarding the treatment of hæmoptysis, more particularly by **Amyl Nitrite** and **Nitroglycerin.** Otis[30] emphasizes rightly the necessity for gauging the state of the blood-pressure in hæmoptysis with a view to determine the line of treatment. He points out that, in addition to immediate treatment, including rest in cool air, use of ice if necessary, and a hypodermic injection of morphine and atropine, further treatment will depend on the state of the blood-pressure. If this be comparatively high, inhalation of amyl nitrite, or the use of nitrites internally, is called for. If, on the other hand, the blood-pressure be already low, these are unnecessary. On the contrary, he thinks ergot may be called for in order to raise the blood-pressure. It may be suggested, however, that in most cases a rapid rise of blood-pressure is undesirable. Ergot is always of doubtful service. Considerable clinical experience has been published in support of the treatment of hæmoptysis associated with high pressure by means of the nitrites. While in cases of definitely high pressure these may be indicated and safely administered, the *routine* treatment of hæmoptysis by means of amyl nitrite is to be deprecated.

(*See also* Section SANITARY SCIENCE.)

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TYPHOID FEVER.—(*See also* PARATYPHOID FEVER.)

E. W. Goodall, M.D.

ETIOLOGY.—The bacillus of typhoid fever will remain in the tissues of a person who has suffered from the disease for a very long period after recovery; and under certain conditions such a person may be a source of infection. Thus in a case investigated by Levy and Kayser,[1] a woman, who was an inmate of a lunatic asylum in Strasburg, underwent an attack of typhoid in 1903. After recovery she was allowed to mix with the other inmates, and up to October, 1905, occasional outbreaks of the disease occurred amongst her associates. An examination of the woman's stools was made, and the *Bacillus typhosus* was found in them. She was isolated, and no further cases arose. During the following year bacilli could still be obtained from the stools. In October, 1906, she was taken ill with fever and gastric disturbances, and she died after eleven days' illness of hypostatic pneumonia. Cultures were made from the spleen, liver, bile, wall of gall-bladder and a gall-stone found in it, and typhoid bacilli were found in all.

R. M. Buchanan[2] read a paper before the Glasgow Medico-Chirurgical Society, in which he gave an account of experiments made by him showing that flies were capable of conveying on their feet the organisms of typhoid fever, swine fever, anthrax, and tuberculosis.

A small outbreak of typhoid fever due to eating clams, occurring in the Maldon (Essex) rural district, is recorded by J. F. Beale.[3] The clams had been obtained from the Blackwater estuary, near the Maldon outfall sewer.

Gaudy[4] has recorded an outbreak of typhoid fever in one of the wards of the Lariboisière Hospital. A patient suffering from that disease having been admitted to the ward, eleven days later two other patients and a nurse fell ill with it, and a few days later three more patients were attacked. All the patients had been in the ward for some time.

PATHOLOGY.—A case of "*typhoid spine*" of great interest has been published by McCrae.[5] An account of this unusual sequel of typhoid fever was given in the *Annual* for 1907, p. 573, and it was stated that the pathology was doubtful. McCrae, however, showed by radiograms that in his case there was a deposit of bone apparently in the lateral ligament between the second and third lumbar vertebræ. In a case of paratyphoid fever followed by the symptoms of "typhoid spine," McCrae also demonstrated a growth of new bone on both sides between the fourth and fifth lumbar vertebræ. The condition is, therefore, one of *spondylitis*. Gilney[6] also reports two cases; the treatment recommended as having given the most favourable results is the **Cautery, Fixation** of the spine, and later **Massage** and **Gradual Exercise.**

It has long been known that the *Bacillus typhosus* can be obtained from the gall-bladder in nearly all fatal cases of typhoid fever; yet in the common form of the disease, gall-bladder complications are not common. Two cases—one reported by Franz Ehrlich,[7] of Stettin, the other by Khautz,[8] of Vienna—show that the local lesions due to the *B. typhosus* may be confined to the gall-bladder. In Ehrlich's case the patient, a man, presented the following symptoms: hepatic colic, jaundice, a gradually increasing pyrexia which soon became oscillating, clay-coloured stools, enlargement of the spleen, frequent and compressible pulse. Widal's reaction was positive, and the *B. typhosus* was obtained from the blood. The patient died on the sixteenth day. The autopsy showed diffuse parenchymatous hepatitis, inflammation and dilatation of the biliary passages, but no stones; no ulceration of the intestines, but only some swelling of some of the follicles. In Khautz's case the patient was a woman in whom the symptoms were those of distention and suppuration of the gall-bladder. The gall-bladder was opened, and pus and some small gall-stones let out. A good recovery resulted. The *B. typhosus* was isolated from the pus, and the patient's blood gave the Widal's reaction.

Diagnosis.—Coleman and Buxton[9] have extended their analysis of cases of typhiod fever in which the blood was examined for the bacillus. We referred last year to 604 cases collected by them. The number of cases they now report upon is 1602; some of these came under their own observation.

Method of Examining the Blood.—Ten cc. of blood are drawn in an all-glass syringe from a vein at the bend of the elbow. According to the authors, the best culture medium with which to mix the blood is one made of 90 cc. of ox-bile, 10 cc. of glycerin, and 2 grams of peptone. The ox-bile prevents coagulation and inhibits the bactericidal action of drawn blood. The ox-bile mixture is distributed into small flasks, 20 cc. in each flask, and sterilized. About 3 cc. of blood are run into each flask. "The flasks are then incubated, and the next morning streaks are made from each flask over the surface of a litmus-lactose-agar plate. If micro-organisms are present, a growth may be observed in five or six hours If the growth does not redden the medium, and is found to be a bacillus resembling the typhoid organism, it is tested for the Widal reaction with immune serum. By this procedure we are often able to determine if the case is one of typhoid fever or not within twenty-four hours after drawing the blood." In 1602 cases, collected from thirty-three different sources, 1197 gave a positive result, or 75 per cent. Of 224 examinations made during the first week of the disease, 200 (89 per cent) were positive; in one case reported by Widal the bacilli were obtained from the blood on the second day of the illness. Of 484 examinations made in the second week, 353 (73 per cent), were positive; of 268 during the third week, 178 (60 per cent); of 103 during the fourth, 39 (38 per cent); and of

58 made after the fourth week, exclusive of relapses, 15 (26 per cent) were positive.

The observations of these two writers agree with those of the majority of workers in this subject, that the bacilli are present in the blood of every case of typhoid fever; that they persist during the febrile period, and disappear when the temperature falls. But it is doubtful if the bacilli multiply in the blood; it is probably in the lymphatic system that multiplication takes place: the bacilli then "overflow" into the blood. According to the writers, "there appears to be a definite relation in the evolution of typhoid fever between the symptoms and the bacillæmia. The increasing intensity of the symptoms in the earlier period of the disease corresponds to active growth of the bacilli. They invade the blood-stream in increasing numbers, and are then destroyed. Then comes the stationary period, when the ratios of growth and destruction appear uniform. The steep [? step] curve period corresponds to a diminishing bacillæmia, and defervescence to the complete disappearance of bacilli from the blood." But though the bacilli disappear from the blood, they may, and often do, remain in various organs and tissues in an active state in some cases, and in an inactive though living condition in others.

Müller and Graf,[10] of Kiel, found typhoid or paratyphoid bacilli in the clot of eight out of eleven specimens of blood sent to them for Widal's reaction. Kurpjuweit,[11] however, only succeeded in growing the bacilli from such clots in twelve out of 100 cases of typhoid. He spread the clot on a litmus-lactose-agar plate, as in the Drigalski-Conradi method. Fornet[12] succeeded in obtaining the typhoid bacillus from blood-clots in capillary tubes by the following method. He put 5 cc. of fresh ox-bile in test tubes, which were then sterilized in a steam oven or by boiling in water. Into one of these tubes, after cooling, he put the clot from a capillary tube and incubated it for the night. The next day a large Endo's or Drigalski-Conradi plate was inoculated with the bile and clot. In fourteen out of nineteen cases the typhoid bacilli grew.

A useful paper on the value of Widal's reaction in typhoid fever was read by W. J. Wilson[13] before the Ulster Medical Society. He employed a 12 to 24-hours-old agar culture, a 1–50 dilution of serum, and a time limit of one hour. Of 230 cases examined, 112 were positive and 118 negative. Of the 112, in four the reaction was feeble, and of these one only was found to have typhoid. Of the remaining 108 positive cases, 105 had typhoid. Of the 118 negative results, 108 were not cases of typhoid fever. Wilson gives an account of two cases, which are very instructive from an etiological point of view.

"A woman, the wife of a byreman, had an attack of what appeared to be influenza complicated with jaundice. The patient was back at her work—milking cows—three weeks after the onset of the illness. A fortnight after the woman resumed milking, an outbreak of typhoid fever occurred in the Windsor district of Belfast, and it was found that nearly all the cases, some thirty in number, received milk from this particular dairy. On inspection by the Public Health Authorities it was found that the premises occupied by this woman were in a highly insanitary state. A specimen of the woman's blood sent to the laboratory for examination gave a markedly positive reaction with the typhoid bacillus. The woman was then prevented from handling the milk, with the result that three weeks later the last case among customers supplied with milk from this dairy occurred."

In commenting on the negative results, Wilson writes as follows: "It was my custom on finding a blood give a negative reaction in a case in which the physician in charge strongly suspected typhoid fever, to try to get a catheter specimen of urine, on the chance of finding in it a paratyphoid bacillus. This procedure brought to light a rather interesting case.

"A woman, æt. 22, was admitted into one of Professor Lindsay's wards with a history of malaise of over a week's duration. Her temperature was 103·5, pulse 114; she had also the flushed face, severe frontal headache, and distended abdomen characteristic of typhoid fever. Her blood gave a negative reaction. It was found that she had complete constipation for a fortnight. On the day after admission, as the result of an enema, her temperature dropped two degrees. On the following day, after a second enema, her temperature became normal, and continued normal.

"The interesting feature of this case was that during the time the girl was in hospital she was excreting large numbers of *B. coli communis* in her urine, although she had no symptoms of kidney or bladder trouble. The spleen was palpable, and on a certain day she had a dozen typical typhoid spots on the abdomen. Her blood continued to be negative to the *Bacillus typhosus*, and it had no agglutinative action on the colon bacillus isolated from her urine. This was probably a case of 'fæcal fever,' a condition for the occurrence of which Nothnagel cites reputable authorities."

At a meeting of the Clinical Society on May 10, 1907, French and Louisson[14] gave an account of 135 cases in which they had examined (for Widal's reaction) the blood of persons who had passed through an attack of typhoid fever. The examinations were made at periods varying from two months to eight years after recovery. The standard for the reaction (which had also been adopted when the persons were in Guy's Hospital for the attack of typhoid) was clumping within half an hour with a 1–200 dilution. In 7·5 per cent a complete reaction was obtained; in 22·5 per cent an incomplete one; and in 70 per cent none at all. The interval that had elapsed since the illness made little difference as to the presence of the reaction. A complete reaction was present in 11 per cent of the men and none of the women.

It has long been known that there is a diminution in the number of leucocytes in the blood in typhoid fever. According to Gennari[15] this may be observed quite early; for out of sixty-six cases examined by him during the second to sixth day, forty-seven showed this diminution, while in only twenty-three was Widal's reaction present. He also found that it was more common in severe than in mild cases.

Leedham-Green[16] gives detailed accounts of three cases illustrative of the difficulty there is in these cases of distinguishing between ordinary appendicitis and that found in typhoid. In his three cases the patients had suffered some weeks or months before with symptoms pointing to appendicitis. When attacked with typhoid, the symptoms of appendicitis quickly manifested themselves and masked the initial symptoms of typhoid. Probably the inflammation of the bowel due to the typhoid infection set up an early and acute inflammation in an unhealthy appendix. In two of the cases an appendicular abscess was opened. It was not till some time later that it was possible to diagnose typhoid fever.

The author quotes cases recorded by other observers in which symptoms of appendicitis early in typhoid led to operation, with the result that the appendix was found normal, though sometimes other intestinal lesions were present.

A case of ulceration and perforation of the appendix cæci, with the formation of an abscess, is recorded by Moffatt.[17] The symptoms of appendicitis came on acutely a fortnight after the commencement of convalescence in a girl aged 17 years. Removal of the appendix and drainage resulted in recovery. Reference to other cases of a like nature are given.

A case of rupture of the spleen in an adult male suffering from typhoid fever has been recorded by West and Dudding.[18] The symptoms were similar to those caused by perforation of the intestine, which was suspected.

According to J. D. Rolleston,[19] Russo's methylene blue reaction is of more value than the diazo reaction in the diagnosis of typhoid fever. The solution required for the tests is 1–1000 of methylene blue in water. Four drops of the blue solution are added to 4 or 5 cc. of urine, which should be filtered first if it is turbid from an excess of urates or phosphates. If the reaction is positive a uniform mint or emerald green coloration is obtained when the tube is shaken. If the reaction is negative there is no, or very little, green colour. The reaction was obtained by Rolleston in forty-four out of fifty-four cases of typhoid ; most of the ten cases in which it failed were in the convalescent stage, and it usually disappears at about the commencement of lysis. Occasionally the reaction may be obtained in other diseases.

The writer[20] draws attention to the fact that an attack of typhoid fever occasionally commences quite abruptly with severe symptoms. Instances are also given in which the initial symptoms were those of peritonitis, acute rheumatism, purpura, mania, meningitis, and acute pneumonia. An account of a case in which the action of the virus was mainly and quite early directed to the kidneys, causing nephritis, has been published by Napier and Buchanan,[21] of Glasgow.

Occasionally an erythema (E. marginatum, or a patchy or macular erythema) is present during the early stage of typhoid fever before the proper rash (spots) comes out.

The protean nature of this disease is well illustrated by a case recorded by J. M. Cowie.[22] The patient, an adult male, was sent to an isolation hospital as probably suffering from cerebrospinal fever.

He had been ill for a fortnight. The symptoms were: occasional delirium; severe headache, temporal and occipital; photophobia; marked retraction of the head and of the abdomen; the legs were drawn up, and Kernig's sign was well marked on both sides. There was no rash. The blood-serum reacted, when diluted 1–50, with typhoid bacilli; but no meningococci could be detected in the fluid drawn from the spinal canal by lumbar puncture. The patient died two days later. There was ulceration of the large and small intestine, one ulcer in each; the mesenteric glands were enlarged, as was also the spleen. There was purulent meningitis. The only organism to be obtained from the pus was a Gram-positive diplococcus occurring in chains, which was not lethal to a rabbit. The patient's mother had died two weeks earlier after a three weeks' illness, said to be perityphlitis.

TREATMENT.—Professor [23] Chantemesse has brought the figures of his **Serum-treatment** of typhoid up to July of this year. From July, 1901, to July, 1907, he has had under his care at the hospital, Bastion No. 29, (Paris), 1000 cases, of which 43 have been fatal, a case-mortality of 4·3 per cent. During the same period 5621 cases have been treated in fourteen other hospitals in Paris, with 960 deaths, a mortality of 17 per cent. His serum treatment was also employed by Prof. Brunon at Rouen, and Dr. Josias at Paris, in cases of typhoid fever in children; the former had 100 cases with three deaths, the latter 200 with eight. Before this treatment was introduced, cases treated by these physicians without serum had had a mortality of 10 to 12 per cent. At the military hospital of Val-de-Grâce, ninety cases had been treated with serum with five deaths, a mortality of 5·5 per cent. During the previous six years there had been 648 cases, with sixty-nine deaths (10·6 per cent mortality).

The serum is obtained from horses which have, over a long period, received sometimes an emulsion of virulent typhoid bacilli into the veins, sometimes soluble typhoid toxin subcutaneously. The toxin is made by growing very virulent typhoid bacilli in bouillon of ox-spleen in free contact with oxygen. In forty-eight hours the growth covers the surface of the bouillon, and the toxin is elaborated beneath. At the end of seven days the toxin is distributed into small flasks, heated to 55° C., and centrifuged. This toxin has the same properties as typhoid endotoxin. When this toxin is employed in the immunization of a horse, the periods between the injections should be of some duration, as an injection gives rise to considerable pyrexia. The process of immunization is very slow, and may last for some years. If this immune serum is injected into rabbits or guinea-pigs it produces no obvious effect; but they are protected from the action of typhoid bacilli subsequently injected. Thus, if a guinea-pig, which twenty-four hours previously has been injected with 2 cc. of the immune serum, is inoculated with a fatal dose of typhoid bacilli, it will not suffer, while control animals not so treated with serum will die. The serum acts by aiding or inducing phagocytosis. Thus, if equal doses of typhoid bacilli are injected beneath the skin of the ear of several rabbits, some of which have been injected with 2 or 3 cc. of the immune serum a few hours before, and some have not, it will be found after a few hours that in the protected rabbits the large majority of the bacilli have been taken up and destroyed by the phagocytes, while in the unprotected animals the bacilli are as active and have multiplied as freely as in a bouillon culture. The immune serum also protects rabbits from the action of the toxin of the typhoid bacillus, unless the serum is injected at too long an interval after the toxin. In rabbits that have been injected with toxin only, the spleen and the marrow of the bones become intensely congested and engorged with blood; but in rabbits which have received serum as well as toxin, these structures become swollen on account of an enormous hypertrophy of the lymphoid and myeloid tissue, and are not engorged with blood. In typhoid patients treated with the serum the spleen becomes enlarged after a few hours, an enlargement easily demonstrated by the phonendoscope. In typhoid patients also, the power of the white corpuscles of the blood to take up and destroy the bacilli is augmented by the injection of immune serum; so that the serum acts as an opsonizing agent. The opsonic index of typhoid patients is raised by an injection of the immune serum.

Chantemesse's hypothesis of the action of the serum is as follows: "Under the influence of the antityphoid serum—a serum which contains opsonins even after it has been heated—there takes place in the patient's organism . . . a stimulation of the lymphatic system, the bone-marrow, and the blood, all of which have already felt the effects of the toxin. The hyperactivity provoked in these organs and tissues gives rise to opsonins, which appear in great quantity in the blood: the bacilli are seized and destroyed. In mild cases the shock given to the organs and tissues in which the opsonins are produced is not very pronounced, and the serum causes a useful though moderate disturbance. In severe cases the shock caused by the serum is more violent, but also more useful, provided it is kept under control. The course the physician must take is indicated by a study of the curves of the opsonic index. One must, indeed, be cautious of inflicting too severe a shock; there would be a risk of inhibiting the production of opsonins. When the patient's condition becomes worse, in consequence, for instance, of a perforation of the intestine, the curve of the opsonic index falls daily up to the time of death."

The dose of serum is small: five drops or less. Usually one injection is enough. For two to four days after the injection the temperature remains raised; it may even be higher than before; but at the end of that period it begins to fall, and in a few days is normal. With the fall in temperature the pulse-rate diminishes in frequency, the urine is passed in larger quantity, and the patient's general condition is rapidly improved. The spleen becomes enlarged a few hours after the injection. Subsequently it regains its normal size. The number of leucocytes in the blood is also markedly increased. In severe cases the temperature may not fall to normal so quickly as in mild, and it may be necessary to give another smaller injection of serum two or three weeks after the first. A smaller amount of serum should be given in severe cases than in mild. It is of great importance to give the serum as early as possible in the disease.

Complications occur, in spite of the serum, in severe cases, and relapses may follow. With respect to the acute periostitis that is occasionally met with after an attack of typhoid, Chantemesse states that if a drop of the serum is injected into the centre of the lesion, the inflammation will quickly subside, and a cure result in two or three days.

Chantemesse has devised an ophthalmic test for typhoid fever, like that of Wolff-Eisner with tuberculin in tuberculosis. A weak solution of the typhoid endotoxin is prepared by treating with water and alcohol typhoid bacilli that have been heated and ground in a mortar. If a drop of the solution is dropped into the lower conjunctival cul-de-sac, a slight conjunctivitis is set up, which attains its maximum in six to ten hours. This reaction will not take place in persons who are not suffering from typhoid. It occurred in several of this writer's cases at a time when the serum-reaction had not yet become positive.

[The information given above has been obtained from a pamphlet, referred to below, written by Prof. Chantemesse. It seems remarkable, however, that he has been able to prepare, apparently without very much difficulty, an efficacious serum, while so many other competent investigators, working on the same lines, have failed. It is true the Professor employs also the bath treatment ; but he gives reasons for concluding that this extraordinary success is not due entirely or even largely to the baths. Again, he and his assistant, M. Milhit, seem to have experienced no difficulty in estimating the opsonic index of their patients ; though we believe that the majority of bacteriologists have encountered great difficulty with the index in typhoid fever. The observation we have quoted above, according to which the opsonic index gradually falls after perforation, is curious, when we remember that the peritonitis which follows the perforation is more often than not due to bacteria other than the typhoid bacillus. The following statement, which we have also taken from the pamphlet, is remarkable, since it records an experience which is very different from that of most physicians, even if we allow that the three or four cases alluded to were really cases of perforation : " Recently there has been added to our pharmacopæia **Sodium Nucleinate,** a drug which, by setting up hyperleucocytosis, has been proved to be an agent capable of exerting an energetic resistance to infection of the peritoneum. When the perforation is not too large and the intestinal contents are not too liquid, when the affected portion of the intestines is so situated as to permit adhesion to adjacent coils, and when—an essential factor—the sodium nucleinate is injected at the very first occurrence of abdominal pain, then the peritoneum affords evidence of a resistance to infection which gives the happiest results to surgical intervention, late though it may be, or is capable of procuring a spontaneous recovery without operation, as I believe I have observed on three or four occasions." Unfortunately this serum has so far not been obtainable in this country. If it increases the opsonic content of the blood, it would appear to be of the nature of a toxin or a vaccine.—E. W. G.]

A case of typhoid fever in which there were two perforations of the small intestine and perforation of the gall-bladder has been reported by Kiliani,[24] of New York Intestinal perforation having been diagnosed, laparotomy was performed. The two perforations in the ileum were sutured, and the gall-bladder and cystic duct excised, the stump being ligatured and cauterized. The fundus of the gall-bladder was gangrenous, and there were two gall-stones. The patient died twenty-one days later, apparently of lung complications, though there was a partial volvulus of the small intestine.

The action of various wines on the typhoid bacillus has been investigated by Sabrazès and Marcaudiet.[25] They have found that most wines are bactericidal; as a rule white wines are more so than red. The bactericidal action is not due to the alcohol, but to the acids in wine. White wines contain free sulphuric acid in variable amount.

Perez,[26] of Teneriffe, recommends **Iodine** in the treatment of typhoid. He gives it in the form of the B.P. mixture, 3 to 15 min. diluted in 1 or 2 dr. of rum or cognac in about 1 or 2 oz. of water with a little sugar, three or four times in the twenty-four hours. Walsh[27] advises adding **Carbolic Acid**, 1 min. of pure acid to 2 min. of tincture of iodine in a tumbler of water, the patient to drink as much as he likes.

REFERENCES.—[1]*Münch. med. Woch.* Dec. 11, 1906; quoted in *Brit. Med. Jour.* June 22, 1907; [2]*Lancet*, July 27, 1907; [3]*Ibid.* Jan. 5, 1907; [4]Quoted in *Lancet*. Nov. 17, 1906; [5]*Amer. Jour. Med. Sci.* Dec. 1906; quoted in *Lancet*, Feb. 2, 1907; [6]*N.Y. Med. Jour.* April 20, 1907; [7]*Deut. med. Woch.* Oct. 18, 1906; [8]*Wien. klin. Woch.* Nov. 1. 1906; [9]*Amer. Jour. Med. Sci.* June, 1907; [10]*Münch. med. Woch.* 1906, No. 2; quoted in *Lancet*, May 4. 1907; [11]*Arbeit. a. d. Kaiserlich. Gesundheit.* Bd. xxv. H. 1, 1907 (ibid.); [12]*Münch. med. Woch.* 1906, No. 26 (ibid.); [13]*Med. Press.* June 26, 1907; [14]*Lancet*, May 18, 1907; [15]*Rif. Med.* Mar. 16, 1907, in *Brit. Med. Jour.* June 15. 1907; [16]*Lancet*, Feb. 9, 1907; [17]*Med. Rec.* June, 1907; [18]*Jour. R.A.M.C.* Aug. 1906; [19]*Hosp.* Sept. 22, 1906; [20]*Brit. Med. Jour.* Aug. 17, 1907; [21]*Glasg. Med. Jour.* Dec. 1906; [22]*Brit. Med. Jour.* Feb. 16, 1907; [23]*Sérothérapie de la Fièvre Typhoide* (Paris: Imprimerie de la Cour d'Appel, 1907); [24]*Ann. Surg.* Jan. 1907; [25]*Ann. de l'Inst. Pasteur.* April 25, 1907, in *Brit. Med. Jour.* June 1, 1907; [26]*Brit. Med. Jour.* June, 1907; [27]*Ibid.* Aug. 1907.

TYPHUS FEVER.

E. W. Goodall, M.D.

Convection by Fleas.—Prof. Matthew Hay[1] has brought forward several reasons for concluding that typhus fever is conveyed from the sick to the healthy by fleas. The reason may be shortly put as follows, the observations on which they are founded having been made in a recent epidemic at Aberdeen: (1) Every case of typhus seen and examined by Hay or his assistants in hospital was flea-bitten, and the members of the hospital staff who complained most of flea-bites were those who were attacked with typhus. Care was exercised to distinguish between flea-bites and the petechiæ of the rash; (2) In cases where the patient was clean and free from bites, it was found that he had been at the probable time of infection in contact with verminous patients; (3) The disease did not spread in clean houses with clean inhabitants, even though the patient remained in the house for the larger part of his illness; in two cases of this sort there had been no attempt at isolation; (4) Every nurse and wardmaid in the hospital who was attacked, except two, was employed in removing the patients or in attending to them immediately after admission. The two exceptions were nurses, of whom one had been employed in cleaning some dirty children who had been removed from a family in which a case of typhus had occurred. Some of these children fell ill of the disease a few days later. It is suggested that they acted as carriers of infected fleas derived from the patient. The other nurse had been very close to patients who were being cleaned soon after their admission. No nurses, wardmaids, or medical men, who were in close contact with typhus cases after they had been cleaned, contracted the disease; (5) An ambulance driver, who had frequently carried children ill with typhus in his arms, and had been pestered with fleas, caught the disease. Precautions were then ordered for the remaining ambulance staff (the wearing of top-boots with the trousers tucked in the boots, the donning of close overalls that buttoned tightly round the neck and wrists, and the smearing of neck, wrists, ankles, and boots with a solution of eucalyptus oil in olive oil. Thenceforth no other members of the ambulance staff caught typhus.

REFERENCE.—[1] *Public Health*, Sept. 1907.

ULCERS.

Priestley Leech, M.D., F.R.C.S.

Prof. R. Lennander,[1] of Upsala, has a very interesting article on the treatment of different infections by the application of **Strong Carbolic Acid**, followed by that of **Alcohol.** This procedure was first suggested by Phelps, of New York. In cases of soft sores good results are given by first painting the sores with 95 per cent **Phenol** and then arresting its cauterizing action with an application of 95 per cent **Alcohol.** Care must be taken that all the ulcers are treated, for if one be missed the granulating surfaces again become infected. In buboes due to soft sores the same treatment may be pursued: open the bubo, scrape it well, apply the carbolic and alcohol, and plug the resulting cavity with sterile or weakly antisepticized gauze. Foul ulcers of the leg can be cleaned with one to three applications of phenol and spirit. Carbuncles can be excised as completely as possible and the same procedure adopted. In subacute suppuration and osteitis of the wrist, in fistulæ in bones, in mixed infections of tubercle and staphylococci, in chronic osteomyelitis, and in whitlow, the same procedure has given good results after the diseased parts have been excised as completely as possible. In traumatic infections, e.g., septic compound fractures, good results have been obtained. In tuberculosis of the joints, e.g., after excision of the hip and knee, Lennander has used the same treatment, and he says it does not interfere with primary union.

Early removal of the infected focus, and then the phenol-spirit application, is, he thinks, the best procedure. He has also successfully treated actinomycosis by the same method.

REFERENCE.—[1]*Beitr. z. klin. Chir.* Bd. li. H. 1.

ULCERS.

E. Graham Little, M.D., F.R.C.P.

The chronic ulcer is the opprobrium and the despair of the clinical physician. Bertram Stevens[1] gives some useful hints for the transformation of this type into the "healthy healing ulcer." Excess of granulation tissue on the surface must be removed with the **Curette,** or by **Lunar Caustic,** and the surface covered with lint cut to the shape of the ulcer and soaked in a weak solution of chloride or sulphate of zinc. If the ulcer is œdematous, with flabby undermined edges, after the preliminary curetting, a powder of **Iodoform** and **Boracic Acid** (1–2) may be dusted on it. When the ulcer is inflamed and angry-looking, warm **Boracic Fomentations,** with powdered **Chloretone** dusted on the surface, will be useful. Weak lead-lotion will generally be a soothing dressing, and the affected part should be raised and only lightly bandaged over. If the ulcer should slough, the slough must be removed, the surface swabbed with **Phenol,** and **Charcoal Poultices** applied. It should be bathed several times a day with liq. sod. chlorin. (B.P., 1–10 or 20). Stevens recommends particularly the administration of **Calcium Iodide,** internally, and the application to the surface of the ulcer of **Decalcified Cancellous Bone.** The ulcer is swabbed over with hydrogen peroxide, and the surface covered entirely with thin slices of the bone; over the bone dressing is placed boracic lint wrung out of hot water and retained in position by crêpe bandages; the dressings are changed every three to five days.

Peter[2] confirms the results, reported by Arbour Stephens in the *British Medical Journal*, July, 1906, of the treatment of ulcers of the leg with **Calcium Iodide.** Two grains of the drug given in mixture three times a day are sufficient, and act as well as larger doses. Beldau[3] recommends the following ointment:—

℞	Sacch. Alb.	2 parts	Ol. Olivæ	āā 15 parts
	Ceræ Alb.	5 ,,	Sebi Bovini	
	Mel. Rosat.	8 ,,		

This must be freshly prepared, spread on lint or linen, and attached lightly with a bandage. The dressing must be changed every day, and the place washed with tepid water, to which a little soft soap may be added.

REFERENCES.—[1]*Pract.* Aug. 1907; [2]*Brit. Med. Jour.* April 27, 1907; [3]*Münch. med. Woch.* Feb. 26, 1907.

URACHUS, CYSTS OF.

Rutherford Morison, F.R.C.S.

Walter Rupert Weiser[1] contributes an article on urachal cysts, with a record of three cases of his own. A typical case should show a cavity lined by stratified epithelium covered by non-striated muscle, also the non-dilated portion of the urachus. The cyst should lie outside and in front of the peritoneal cavity. Few of the recorded cases satisfy these requirements. Small cysts are of no clinical importance, and are therefore ignored.

To Lawson Tait he awards the credit of being the first to make a diagnosis of this condition. His own three cases were serious on account of their large size and of their adhesions to the underlying viscera. Each was extra-peritoneal and with a bladder attachment, making the diagnosis conclusive. All recovered after as much of the cyst as possible had been removed.

T. L. MacDonald[2] reports a case of an enormous cyst of the urachus in an unmarried woman aged 40, with the history of a slowly growing abdominal tumour beginning in the region of the bladder and growing upward (*Fig.* 93). The tumour lay between the anterior peritoneum and the parietes, and was excised with difficulty owing to the density of the adhesions. It was firmly connected with the bladder. Nodular masses on the inside of the tumour looked and felt like carcinomata, but examination proved them to be papillomata.

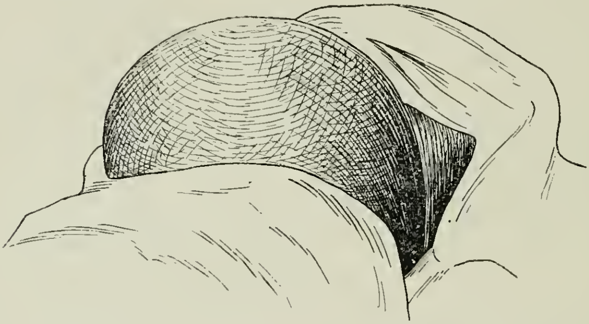


Fig. 93.—A huge Cyst of the Urachus. Gives a fair representation of the abdomen before operation.

References.—[1]*Ann. Surg.* Oct. 1906; [2]*Ibid.* Aug. 1907.

URÆMIA.

(*Vol.* 1906, *p.* 526)—Open the bowels with salines, especially if there be dropsy. For sleeplessness give **Chloral** or **Morphine** in small doses. These are also useful in the treatment of convulsions, where **Chloroform** is also needed sometimes. Avoid morphia where there is hydrothorax or pulmonary œdema; but small doses are safe, and useful, for "renal asthma." For headache and delirium, chloral is valuable. In cases with high tension, give **Trinitrin**; but if there be a low tension, associated with cardiac dilatation, give **Digitalis**, with **Caffeine Citrate**, in gr. v doses, for not more than three days at a time. Treat coma by **Purgation** and **Venesection** (with intravenous injection of normal saline).

URETERS, SURGERY OF.

E. Hurry Fenwick, F.R.C.S.

Rupture of the Ureter.—M. C. Blauel[1] reports a case of rupture of the ureter, and discusses eleven other published cases. His conclusions are as follows: The most common cause is a blow on the abdomen, such as a kick from a horse, or the wheel of a cart passing across the body—the ureter being crushed against the transverse processes of the lumbar vertebræ. Rupture is most common in the upper part of the tube, then in the middle, and least common in the lower part, the last being only one in twelve cases. The rupture may be complete or incomplete, and if incomplete the fissure may be transverse or longitudinal. The peritoneum was torn across in three cases out of the twelve. Other intra-abdominal lesions are frequently present, and the lesion may be masked by a more serious condition.

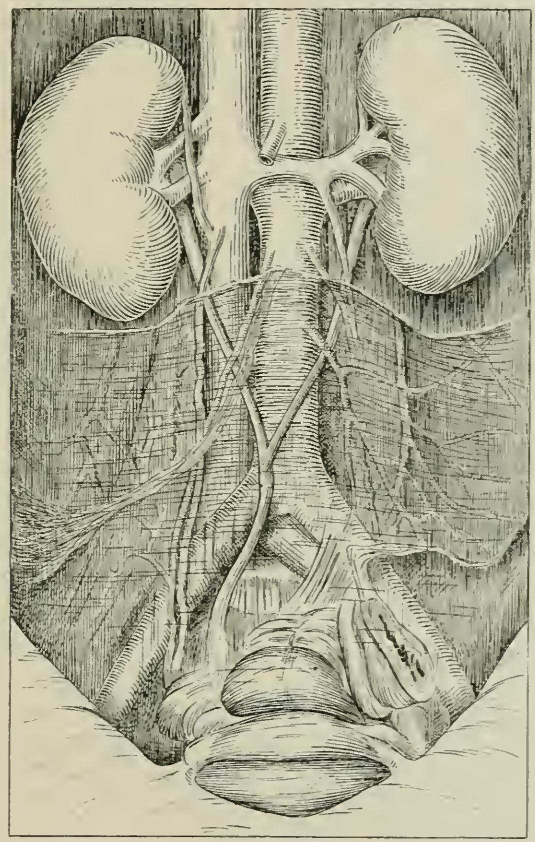


Fig. 94.—Retroperitoneal Uretero-ureteric Anastomosis. Anterior to aorta and vena cava.

Diagnosis.—A diagnosis immediately after the lesion is doubtful or impossible. Hæmaturia may or may not occur: diminished flow or suppression of urine may be present. The other symptoms are usually those of shock. As a rule the only diagnosis possible is a serious lesion of the urinary apparatus. After a few days, if the patient lives, a fluid tumour is found in the flank on the injured side: this may be caused by extravasation of urine into the peri-ureteric tissue, or by an acute distention of the pelvis of the kidney (hydronephrosis). Catheterization of the ureter will show absence of urinary secretion.

TREATMENT.—Unless the condition is diagnosed soon after the lesion by an exploratory incision, the treatment is always **Nephrectomy,** as attempts to repair the ureter usually fail. Early diagnosis is therefore very desirable.

How to Conserve a Damaged Ureter.—

1. By **Uretero-ureteric Anastomosis.**—An article on experimental surgery by Wallace Sharpe[2] shows the possibility, both anatomical and physiological, of trans-uretero-ureteric anastomosis. He emphasizes that the blood supply of the ureter is ample, and the tube can be freely stripped without sloughing occurring if only the peri-ureteric arterial plexus is conserved. If the ends of the ureter cannot be anastomosed, he would recommend trans-uretero-ureteric anastomosis. This can be done either intraperitoneally or extraperitoneally, and in the extraperitoneal method the ureter can be brought across either in front of the aorta and vena cava, or behind these structures (*Fig.* 94). He claims to have found by experiments on dogs that the intraperitoneal operation can be successful, and whilst he states that the extraperitoneal is anatomically possible, further experiments are necessary to prove it a physiological success.

2. By **Uretero-vesical Junction.**—Paton[3] describes a case in which Hammerschlag's operation for the transplantation of the ureter into the bladder, for the cure of the intra-vaginal fistula, was carried out successfully.

3. By **Uretero-colonic Junction.**—Barling[4] reports a case of transplantation of the ureters into the colon to cure a suprapubic fistula following rupture of the urethra and laceration of the neck of the bladder. The ureters were grafted separately at two operations, and the patient has to defæcate every four hours when up.

4. By **Uretero-appendical Graft.**—Luigi Bonanome[5] discusses the question of utilizing the vermiform appendix for repairing the ureter when a portion of it has been destroyed.

Infection of a Renal Pelvis and Ureter by Gonorrhœa.—The possibility of a urethral gonorrhœal discharge being kept up for an indefinite period by reinfection from the pelvis of the kidney was shown by Lewis.[6] It is not often that so clear a clinical case of this complication is reported, and the fact that a double ureter was discovered, one infected and the other healthy, renders the case of interest as well as of value. The patient had a recurring discharge containing the gonococcus for five years, although there was no fresh exposure to infection. Cystoscopic examination showed two ureteric orifices on the left side of the bladder, and from one healthy urine was obtained by catheter, whilst that from the other was loaded with diplococci. Healthy urine was also obtained from the right ureter. Injections of **Silver Salts** into the infected left ureter was followed by disappearance of the gonococci and pus, and no recurrence of the urethral discharge has occurred since (seven months).

Lumbar Ureterostomy.—Rovsing advocates (1907) the formation of a lumbar ureterostomy rather than the method of implanting the ureters into the colon. There is nothing especially novel in this plan, but it has evoked a suggestion from Professor Wilms, of Basle,[7] who advocates bringing the ureter to the anterior superior spinous process and making it open there, calling the operation a supra-inguinal ureterostomy. As an additional point of technique he advises, in order to prevent contraction of the orifice, that the terminal end of the ureter should run under the skin for 4 cm. as V. Hacker makes his colostomy wounds. He suggests that this method may prove of use in washing out the kidney pelvis in tuberculosis of that organ, and when the lesions are healed that the ureteric terminals may be stripped away from the inguinal wounds and grafted into the bladder.

REFERENCES.—[1]*Beitr. d. klin. Chir.* li ; [2]*Ann. Surg.* Nov. 1906 ; [3]*Brit. Med. Jour.* Jan. 19, 1907 ; [4]*Ibid.* ; [5]*Il Policl.* Jan. 13, 1907, p. 33 ; [6]*Med. Rec.* Oct. 6, 1906 ; [7]*Centr. f. Chir.* 1907, No. 30, p. 873.

URETHRA, SURGERY OF.

E. Hurry Fenwick, F.R.C.S.

Congenital Malformations.—Carl Bick[1] has devised a new operation for epispadias, by dissecting up a mucous membrane flap and forming a new urethra with it. At the end of the eighth day urine was retained for one hour, and at the time of writing the patient can hold his urine for some hours and can pass it at will.

REFERENCE.—[1]*Med. Rec.* Mar. 30, 1907.

URINE.

Prof. J. Rose Bradford, D.Sc., M.D.

Chyluria.—Hertz[1] records an instance of chyluria where post-mortem examination revealed the exact position of the lesion. At the time of observation the patient had been passing milky urine for nine months, and had suffered from difficulty in micturition owing to clotting taking place in the interior of the bladder. The urine contained a considerable amount of fat and proteid, but sugar was never found. The patient had been in India for a short time twenty years before the onset of the disease. Hertz made some observations on the influence of diet on chyluria, and observed that a diet free from fat caused the complete disappearance of fat and proteid from the urine, provided the patient rested for some time after meals. He observed further that the chyluria might appear as early as thirty-five minutes after fat had been eaten, and that the maximum output of fat occurred five hours after the meal. The chyluria was greatly increased in amount if the patient did not rest. On post-mortem examination the thoracic duct was found obstructed above the diaphragm ; the abdominal lymphatics were distended, and a well-marked anastomosis was found between the lacteals and the lymphatics of the bladder. In the interior of the bladder, at a point corresponding to the dilated lymphatics, a mass of fibrin was found adherent to the mucous membrane of the bladder, and this probably indicated the site of the lesion that allowed the chyle and lymph to escape into the urine. Hertz points out that the obstruction of the thoracic duct in chyluria may be the result of stenosis, the sequel of inflammation produced by filaria; hence the chyluria may be present for a long period after the death of the filaria, and therefore none of the latter may be found at the time the patient comes under examination. Chyluria may be due to other causes than the presence of filaria, such as the pressure of enlarged glands or of tumours on the thoracic duct.

The interest in this case recorded by Hertz lies in the fact that the chyluria developed at so long an interval after the patient's return from India. [The reviewer has seen a somewhat similar case of chyluria where the symptoms developed many years after return from Queensland, and where at the time of the presence of the chyluria no filaria could be found. In this case attacks of abdominal pain and vomiting, together with fever, occurred from time to time, and subsequently to one of these attacks, in the course of which a considerable quantity of pus was discharged from the bowel, the chyluria disappeared.—J. R. B.]

In cases of chyluria it would seem that the leakage of lymph and chyle occurred most frequently into the bladder, and it is sometimes strangely influenced by posture. Thus, not only may it be more marked in the upright than in the recumbent posture, but in some instances it may only be present when the patient lies on one side. These variations in the occurrence of the condition must depend on the influence of gravity on the leaking lymphatics.

Pyelitis.—Nofer[2] draws attention to the relative frequency of pyelitis, and has collected the statistics of its incidence in the annual reports of nine hospitals. He finds amongst a total of 61,393 cases of medical, surgical, and gynæcological diseases, only twelve cases of pyelitis, two of pyelonephrosis, and fifteen cases of pyonephrosis. These numbers are very small, and it would certainly seem that acute pyelitis is more common in this country than in America. Pyelitis of varying degrees of severity occurs as an accompaniment of the acute infective diseases, e.g., typhoid. It is also stated to occur as a sequel to traumatism and from exposure to cold. It may certainly be seen as the result of the action of some irritating diuretics, especially balsams and ethereal oils, and it occurs in slight degree in a very large number of cases of nephritis and Bright's disease. In a great many instances of chronic nephritis, centrifugalizing the urine gives distinct evidence of the presence of pyelitis. The better known causes of this condition include such agents as calculi, tubercle, malignant disease, and, most important of all, cystitis. The pyelitis dealt with by Nofer is that variety where these common causes can be excluded, and where the disease appears more or less suddenly in the apparently healthy. Its onset is marked by fever and the general symptoms of illness, such as headache, chilliness, or rigors, together with marked pain in one or other loin, which may be limited to the loin, or may in some instances extend towards the front of the abdomen, apparently along the line of the ureter. On examination, the urine is found to contain pus, often in considerable amount. The temperature not uncommonly may reach the height of 103° or 105°, and the pain in the back may be very intense. In some instances symptoms, having occurred on one side, attack the opposite side of the body after an interval of a few days. In the great majority of cases the pyuria and the general symptoms of illness subside and the patient regains health completely. In some instances the temperature will subside in a manner as sudden as that characteristic of the critical fall of pneumonia.

These attacks of acute pyelitis occur not infrequently in pregnant women, and Box[3] draws attention to the occurrence of pyelitis as a febrile affection of sudden onset in children, and he also notes the close resemblance between the temperature charts of these cases of pyelitis and those seen in pneumonia. Box states that in children the temperature may rise as high as 105°. According to him, at the onset of the attack a certain degree of suppression of urine may occur, but later on polyuria is more usual. He states that enlargements of the spleen may often be detected, and that sweating may be pronounced. The disease is as a rule unilateral, and he considers that the right kidney is more likely to be affected than the left. Pain may be a marked symptom, and he states that it is generally sub-costal and not lumbar in position. Some distention of the kidney may be observed, and is possibly due to the obstruction caused by the swelling of the mucous membrane of the pelvis at its junction with the ureter. Box is of opinion that slight forms of the affection exist, characterized by transitory attacks of sub-costal pain with little or no fever. In a large number of instances the colon bacillus is found in the urine in these cases, and it is possible that repeated attacks of pyelitis of this nature may be the cause of hydro- or pyo-nephrosis in adults. Box emphasizes the point that the possibility of the presence of pyelitis should always be borne in mind when dealing with cases of obscure fever in childhood where the pyluria is of persistent, remittent, or relapsing type; and further, that the occurrence of shivering or of rigors should especially direct attention to the urine.

Electrical Resistance of Blood and Urine.—Dawson Turner[4] has elaborated a method of estimating the functional activity of the kidney by comparison of the electrical resistance of the urine on the one hand and of the blood on the other. In health the electrical resistance of a column of blood 5 cubic millimetres long is about 900 ohms, and that of the urine 225. The ratio of these two resistances to one another is called by the author the hæmorenal salt index, and in health this varies between 3 and 5. The higher the hæmorenal index the greater the richness of the blood in corpuscles and the less its richness in salts. Diminution of the hæmorenal index indicates that the kidney is becoming less efficient. The author has made a number of observations of the hæmorenal index in medical and surgical affections of the kidney, and it would seem that the method gives results of considerable value in investigating the functional activity of the kidney prior to operation.

The Estimation of Uric Acid.—Dimmock and Branson[5] describe a new means of clinically estimating the quantities of uric acid in the urine. They mention three methods : (1) A precipitate of ammonium urate is obtained from the urine, and its bulk measured in a specially shaped and graduated tube ; (2) The precipitate of ammonium urate is collected and washed with a saturated solution of ammonium nitrate until free from chlorides, and then decomposed by adding in excess a known amount of a standard solution of nitrate of silver. The precipitate of urate of silver is collected and washed, and the amount of silver present determined by volumetric analysis with a standard solution of thiocyanide of potassium ; (3) In this method, which for some reasons is the most convenient for clinical purposes, the washed ammonium precipitate is decomposed by hypobromite of sodium in a specially devised apparatus, and the quantity of uric acid determined from this. The results obtained by the hypobromite process coincide very closely with those obtained by the Hopkins process. The authors conclude that the first is a very convenient method and gives approximately correct results in a short time, and that by the third or hypobromite process accurate results are obtained where the uric acid ranged from 1–1000 to 1–5000.

Urinary Shreds in Diagnosis.—Saxe[6] has studied the question of the relation of shreds in the urine to the diagnosis and prognosis of certain urinary affections, especially chronic urethritis and prostatitis. Urinary shreds are best studied after proper fixation in stained specimens, and either Unna's polychrome stain or Gram's stain should be used. Urethral shreds may be divided into four varieties : pus shreds, mucus shreds, mucopus shreds and epithelial shreds. Shreds composed of epithelial cells consist of flat pavement cells, and small nuclei are shed spontaneously or after the passage of instruments. The shreds from the prostate, according to Saxe, include special varieties which can be recognized under the microscope but cannot be identified by the naked eye. Comma shreds, which have been looked upon as characteristic of prostatic disease, may, according to Saxe, be divided into two categories : the true comma shreds consist of hooklets of stratified epithelium derived from the prostate ; the false variety consists of fragments of mucopus which roll up into a lump at one end. The presence of shreds is not of great value in localizing the situation of the urethritis in the anterior or posterior part of the urethra, but the presence of prostatic shreds can be recognized microscopically, and is of value. According to Saxe, urethral shreds are of value in determining the stage of the inflammatory process, and they usually appear in the following order : first pus shreds, then mucopus, then mucus, and finally epithelial. The variety of urethral shreds is of but little value in prognosis, except that the fewer the shreds and the less the amount of pus the better the prognosis.

REFERENCES.—[1]*Roy. Med. and Chir. Soc.* Mar. 1907 ; [2]*Amer. Med.* Oct. 1906 ; [3]*Lancet*, Jan. 11, 1908 ; [4]*Med. Press*, Jan. 1907 ; [5]*Lancet*, Jan. 1907 ; [6]*N. Y. Med. Jour.* Mar. 1907.

URTICARIA.

(*Vol.* 1905, *p.* 601)—Bendix recommends the omission of eggs from the diet, and applies an ointment containing **Anæsthesin** and **Menthol** in equal parts, after rubbing the skin with Acetic Acid. Try **Salicin, Antipyrine,** and **Calcium Chloride** internally. Meachen, on the other hand, stops starchy foods, and gives **Hydrarg. c. Creta.** with **Bicarbonate of Soda,** followed by **Salol.** Locally, he applies an **Alkaline Lotion,** with **Carbolic Acid,** ♏v–x per ounce.

UTERUS, DISEASES OF.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Myomata.—Noble[1] has published the most exhaustive report yet made on this important subject. His study is founded on 4880 cases collected from the published records of many gynæcological surgeons. He finds that life is directly threatened in about 14 per cent of these tumours, and he contrasts this estimate with the much lower operative mortality which obtains nowadays. The relation between carcinoma of the body of the uterus and myomata in the same situation appears undoubted from a study of this enormous number of cases. On the other hand, only sixty-three cases were complicated by cervical carcinoma. This would appear to be in accordance with what one would expect, namely, that myomata, which so strongly predispose to sterility, should in this capacity act as a bar to cervical carcinoma, which, as is well known, bears a peculiar and striking relation to child-bearing. Sarcoma complicates or ensues upon these tumours in over 2 per cent of the cases. Cystic degeneration is found in between 2 and 3 per cent. Anæmia of a high degree is present in over half the cases, and as the author states, materially increases the operative mortality when surgical measures are long delayed. He also points out the peculiar frequency with which thrombosis, embolism, and phlebitis complicate these tumours, more especially after operation. This is probably a result of the chronic anæmia from which the patient suffers ; but some authors believe that structural changes in the vessel walls are responsible. The influence of myomata in producing cardiac insufficiencies of various types was first pointed out by Wilson in England, and it is satisfactory to find that Noble's enormous statistics support the former author's observations. There appears good evidence that renal degenerations may follow pressure on the ureters. As regards the influence of the menopause on these tumours, the author states *that he is not personally acquainted with a single authentic case in which a fibroid tumour has entirely disappeared after the menopause.* On the other hand there is overwhelming evidence that the dangers arising from these tumours are aggravated at and after this period.

Noble finds that in a large percentage of the cases (11 to 23 per cent) there existed extra-uterine conditions which, let alone, would have proved fatal to the patient, and he rightly considers that this fact is much in favour of operative interference. The limitation of diagnostic powers, even of those most accustomed to deal with these tumours, has always appeared to the present writers as being one of the strongest points in favour of surgical measures, for it is to be remembered that the presence of a myoma *obscures* the diagnosis of co-existent conditions *outside* the uterus. It has been alleged, even recently, that not more than one out of every two myomata causes symptoms—a subject touched upon in last year's *Annual.* It is noteworthy that Noble has only met with eight such out of considerably over ·300 cases. Indeed, he makes the same observation as the present authors made last year, viz., that such cases do not consult a physician.

The operative mortality of myomata has steadily decreased in the hands of experienced surgeons. Noble places it at 2·26 per cent out of 442 cases. He very properly, however, enters a protest against the indiscriminate performance of these operations by inexperienced operators, remarking that "an untrained, inexperienced surgeon is far more dangerous than any type of tumour."

Giles,[2] in two exhaustive articles founded on 150 consecutive cases, arrives at similar conclusions. He lays special stress on the folly of awaiting the menopause in the hope that the symptoms due to the tumour may be ameliorated or cured. It is precisely at this time that grave complications are most to be feared, and the cessation of hæmorrhage, when it does occur, only removes one of the dangers incidental to these tumours.

Carcinoma.—The increasing interest in the more extensive operations for carcinoma of the cervix is the most noticeable feature of the last twelve months' work in gynæcology. The radical measures first introduced by Wertheim are being gradually adopted by the more enterprising gynæcological surgeons in this country. At present no one here has anything like the enormous operative experience of Wertheim himself, but the operation is being gradually taken up, and collectively a considerable number have already been performed. The present state of progress was summed up by Wertheim himself in an address to the Chicago Medical and Gynæcological Societies.[3] After detailing the various steps of the operation as set forth by himself in the *Medical Annual* for 1906, he reported the results of 345 cases treated in this way. In the earlier cases the operation took from two to two and a half hours; but increasing experience had enabled him to reduce that time to but little over an hour. The earlier death-rate was between 15 and 18 per cent, but of the last 100 cases only eight have died as a result of the operation. The bladder is usually paralyzed for a fortnight, but recovers itself when the patient gets up. In some cases a uretero-vaginal fistula appears towards the end of the first week. This is due to anæmic necrosis. It is preferable to perform nephrectomy to ureteroplasty if the fistula refuses to close, and the second operation is well borne. In 28 per cent of the cases the regional glands were cancerous and the tissues of the parametrium infiltrated. It is impossible in most cases to successfully remove the growth unless the ureters are preliminarily exposed and isolated. All the cases have been kept under observation, and after five years no less than 60 per cent have remained free from recurrence. This is a result attained by no one else. In comparing his operation with the extensive vaginal operations after the method of Schuchardt, he says that the latter are more difficult, less thorough in the removal of the parametrium, and do not permit of the removal of cancerous glands.

Thring[4] has published an interesting paper in the same connection. He has operated on fifty-two cases by the extended method, and speaks highly of it. His primary mortality is somewhat lower than Wertheim's. He has been unable to keep in touch with all his cases, but is aware of eight in which no recurrence has occurred over periods varying between five and ten years, and this in spite of the fact that cancerous glands had to be removed in every case. Such results are very encouraging, and deserve much credit.

Barringer[5] has drawn attention to the diagnostic value of cystoscopic examination of the bladder in determining the operability of these cases. Apart from the actual appearance in the viscus of masses of growth, the following local changes in the trigone and adjacent parts are evidence of attachment of the cancerous cervix to the bladder wall: (1) Ridge-like swelling of the mucosa; (2) Varicosities; (3) Petechiæ; (4) Congestion; (5) Cystitis; (6) Bulbous œdema; (7) Marked elevation of the trigone (always inoperable).

The subject of the radical treatment of carcinoma of the cervix by Wertheim's method was discussed at the Exeter meeting of the British Medical Association.[6] Many speakers took part in the debate, and the general trend of their remarks was favourable to the operation. Spencer, however, considered that the vaginal operations had still much to recommend them in early cases. There can be no doubt that the method has come to stay, and that the operative mortality will fall with increased experience.

Of equal interest to the newer operative measures for the relief of cancer is the recent movement to ensure earlier diagnosis and more prompt treatment of the disease. Milligan[7] has epitomized this subject in an excellent review. The reasons for patients seeking advice too late are various. Chief amongst them seems to be the belief that irregular hæmorrhages at the time of the menopause are normal events. In Germany, Winter has been the pioneer of an attempt to educate the laity to recognize the commoner symptoms of incipient cancer. This is to be attained by the medium of (1) doctors, (2) midwives, (3) the public. He issued in 1902 a pamphlet to every doctor in East Prussia, urging them to make an internal examination in all suspicious cases. To midwives he sent a leaflet pointing out to them the symptoms of uterine cancer, and urging them to send to a doctor all their patients in whom such symptoms had made their appearance. Lastly, he published articles in the lay newspapers insisting on the significance of irregular hæmorrhages, and advising women so afflicted to consult their medical men at once. To operating gynæcologists he also wrote asking them to keep a register of their cases, especially with regard to the time that had elapsed between the appearance of symptoms and their seeking advice. He subsequently published the result of this crusade. It was most satisfactory, the percentage of *operable* cases seeking advice having risen 10 per cent in one year.

In America a committee of the American Medical Association has been formed for the purpose of ascertaining the best way of disseminating knowledge of the early symptoms of cancer amongst the laity. In Switzerland much activity has been shown, and the Obstetrical and Gynæcological Society of that country has issued three leaflets to doctors, to midwives, and to women generally. The latter was published in certain daily papers. In Sweden similar steps are proposed, and a Commission has been formed to investigate the whole subject. In the meantime the Swedish Medical Association has circulated pamphlets after the example of Winter.

Milligan formulates a number of conclusions, of which the following are the most important: (1) All are agreed on the necessity for early diagnosis, and that to ensure this something must be done; (2) In Great Britain no active steps have been taken so far; (3) In other countries, notably Germany, active steps have been taken, with, on the whole, a satisfactory result.

Since the publication of Milligan's paper, the subject has been prominently brought before the medical profession by a discussion at the British Medical Association meeting.[8] It was introduced by Spencer, and many well-known gynæcologists spoke, amongst them Professor Strassman, of Berlin, who laid before the Section the appeal addressed to the practitioners of that city and the neighbouring province by the Berlin Society of Obstetrics and Gynæcology. As a result of the discussion a resolution was passed requesting the Council of the British Medical Association "to appoint a Committee to consider the best means of disseminating knowledge of the importance of the early recognition of uterine cancer."

Retroversion.—Bellingham Smith[9] has summarized the present state of knowledge concerning retroversion of the uterus from the clinical standpoint. He points out that a very large number of cases are accidentally discovered, and have been causing no symptoms. He deprecates strongly the use of a pessary in such patients. He also points out the inadvisability of locally treating patients presenting well-marked symptoms of neurosis unless it is certain that all or part of their complaints can be attributed with justice to the displaced organ.

A paper on the same subject has been contributed by Stevens,[10] who also lays stress on the frequency with which retroversion exists without symptoms. He considers that retroversion is not uncommonly congenital, and that these cases present no symptoms due to the the retroversion *per se*. This observation, with which we entirely agree, is of much practical importance in view of the frequent practice of inserting pessaries (Hodge's and others) into the vaginæ of young unmarried women, who, complaining of some obscure and trivial pains, have the misfortune to present a retroverted uterus as well. No pessary will keep such an organ in anteversion, and if it did the symptoms would not be cured. Too often the insertion of such an instrument is the starting-point of a permanent genital hypochondriasis. It should be recognized that a pessary is a makeshift, only to be used in cases of necessity, and it is at the best as unclean a contrivance as a tooth-plate which the owner never takes out of his mouth to clean Amongst hospital patients it is rarely if ever removed other than in a stinking condition. Even amongst the better and more cleanly classes, absolute cleanliness by means of douching is rarely, if ever, attained. For this reason it should be inserted only when the benefits resulting from the improved position of the uterus may be fairly held to outweigh its disadvantages. It may here be repeated with advantage that unless the uterus can be got into a position of *complete anteversion*, no pessary will retain it in the forward position ; mere pushing out of the pelvis is not sufficient. It has been our lot to remove many of these instruments inserted by various practitioners for the purpose of cleansing and replacement. In the vast bulk of these the uterus, in spite of the pessary, is still in retroversion.

Ventro-suspension of the Uterus.—New methods for achieving this end continue to be published constantly. Montgomery[11] favours shortening the round ligaments by a method somewhat different from that described by others. The uterus having been exposed from above, a traction loop is placed round the round ligament about one and a half inches from its attachment to the uterus. The free ends of the loop are threaded on a needle, a small hole is made in the peritoneum of the broad ligament just external to the point where the loop embraces the round ligament, and the needle threading its way under the peritoneum is made to emerge through the parieties three-quarters of an inch above the pubic bone and one and a half inches from the middle line. Strong traction on the free ends of the loop (previously disengaged from the needle) pulls the ligament through the hole in the parieties. The ligament on the opposite side having been treated in the same way, both are pulled up until the requisite shortening is obtained, when they are sutured in position to the abdominal fascia.

Chronic Metritis.—This interesting pathological change in the uterine wall was first described by Scanzoni in 1860. The subject was brought into renewed prominence by Bland-Sutton in 1904. Gardner and Goodall have published an exhaustive paper on the subject.[12] They divided the cases into two groups : (1) Those in which the change depended upon a true local inflammatory state, spreading in many cases from a chronically infected endometrium. In these there is found an extensive hyaline deposit affecting both muscular and fibrous tissue. The adventitia of the blood-vessels is affected, but not the intima. (2) Those in which the disease appears to be part of a generalized arteriosclerosis, with the changes typical of this condition extensively affecting the blood-vessels of the organ as of other parts. The first group is the commoner, and is related closely to chronic sub-involution. In these cases there is undoubted hypertrophy of the musculature. In both classes severe menorrhagia is the leading symptom. In the first group it is probably due to muscular insufficiency and congestion, but in the second to the general high arterial tension and the degenerate condition of the vessel walls.

Donald and Fletcher Shaw, working independently,[13] have arrived at somewhat different conclusions. They could find no distinctive changes in the vessel walls, neither was there any evidence of inflammatory changes in the usually accepted sense of the word. They considered it as a simple hypertrophy of all the elements of the muscular wall of the uterus. They had not encountered examples of the arteriosclerotic type of the disease described by Gardner and Goodall.

The pathology of the disease must therefore still be considered as unsettled. Clinically the cases are of importance because of the excessive hæmorrhages from which these patients suffer, and which are not controllable by any drug at present known to us. The removal of these uteri by supravaginal subtotal hysterectomy is indicated: (1) When repeated curettings fail to check the bleeding; and (2) When anæmia becomes a prominent feature of the case. Where there is definite evidence of infective cervicitis with much intermenstrual discharge, the whole uterus had better be removed by vaginal hysterectomy.

Dysmenorrhœa.—Herman,[14] in an interesting article, states that true dysmenorrhœa is due to painful uterine contraction, and expressly excludes all those conditions of menstrual pain depending on other conditions, such as backward displacement and congestive states. He gives first place to **Guaiacum** as curative measure. He prescribes it in a mixture with tragacanth or honey. Next to this he places "**Aletris Cordial.**" He also approves of **Potassium Chlorate,** which he gives in combination with the American preparation. While the analgesic drugs, such as antipyrin, aspirin, etc., relieve the pain, they do not cure it. These measures failing to give the desired relief, he advocates **Dilatation of the Cervix,** and should this also fail and the pain become intolerable, he considers **Oöphorectomy** to be justifiable. He does not mention **Subtotal Hysterectomy** as an alternative in these severe cases; but in our opinion this would be the operation of choice.

REFERENCES.—[1]*Jour. Obst. and Gyn. Brit. Emp.* Nov. 1906; [2]*Lancet,* Mar. 9, 1907; [3]*Surg. Gyn. and Obst.* Jan. 1907, in *Jour. Obst. and Gyn. Brit. Emp.* April, 1907; [4]*Jour. Obst. and Gyn. Brit. Emp.* Mar. 1907; [5]*Med. Rec.* May 18, 1907; [6]*Brit. Med. Jour.* Aug. 24, 1907; [7]*Jour. Obst. and Gyn. Brit. Emp.* Jan. 1907; [8]*Brit. Med. Jour.* Aug. 24, 1907; [9]*Pract.* Aug. 1907; [10]*Clin. Jour.* July 11, 1906; [11]Fisher, *Ann. Surg.* Sept. 1906; [12]*Brit. Med. Jour.* Nov. 8, 1906; [13]*Lancet,* Jan. 12, 1907; [14]*Clin. Jour.* May 22, 1907.

VARICELLA.

E. W. Goodall, M.D.

An interesting case of varicella, in which the eruption was confluent and hæmorrhagic, is reported by Charles R. Porter.[1] The patient was a girl aged 13. The illness began with headache, lassitude, and pains in the limbs; a few spots came out on the first day. The eruption was at its height on the sixth and seventh days; it was very profuse, and on the forehead and neck confluent and hæmorrhagic; the temperature was 103° F. The patient made a good recovery, but there was considerable scarring when confluence had taken place, and later, keloid developed in two places.

Diagnosis.—Usually there is no prodromal period ; but in a few instances, for a day or two or even longer, before the eruption, the patient may be out of sorts and there may be slight pyrexia, with very occasionally one of the rashes mentioned below.[2] Now and then the early symptoms are suggestive of small-pox.[3] The diagnosis must then be made on the character and distribution of the eruption. In one instance the writer observed varicella to commence with a well-marked rigor.

J. D. Rolleston[4] has drawn attention to the accidental rashes of chicken-pox. Sometimes these rashes are prodromal, as was observed by Willan and Bateman at the beginning of the nineteenth century ; sometimes they come out after the vesicular eruption has made its appearance. The most common rash is scarlatiniform ; after that the purpuric, morbilliform, and mixed, in the order given. Urticaria is rare. The importance of these rashes lies in the readiness with which they may be mistaken for other infectious diseases, especially scarlet fever.

References.—[1]*Lancet*, May 18, 1907 ; [2]*Brit. Med. Jour.* Aug. 17, 1907 ; [3]*Ibid.* Dec. 22, 1906 ; [4]*Ibid.* May 4, 1907.

VARICELLA.

(*Vol.* 1899. *p.* 587)—For the pruritus, and to prevent scratching, the eruption should be anointed with **Boric Acid in Vaselin.** Gangrenous changes in the vesicles are to be met by frequent bathing or spraying with a solution either of **Corrosive Sublimate** or of **Potassium Permanganate.** In ordinary cases the vesicles will dry up better and with less irritation if sponged with **Calamine Lotion**: ℞ Calaminæ et Zinci Oxidi, āā ʒss ; Glycerin, ʒss ; Aq. Calcis ad ℥j.

VARICES.

Priestley Leech, M.D., F.R.C.S.

Miller[1] gives the results in the treatment of varicose veins of the leg by the methods of Trendelenburg and Schede in the Johns Hopkins Hospital. The conclusions he draws from a study of 128 cases are as follows :—

1. Varicose veins of the leg are not an incident of senility ; the disease is rather one of the young and middle-aged, over one-third of the cases appearing before the thirtieth year and two-thirds before the fortieth.

2. From an etiological standpoint there are two classes of cases : the inflammatory and the non-inflammatory. The first includes about one-third of all cases of phlebitis occurring as a complication or sequel of pregnancy, post-operative convalescence, or an acute infection, among which typhoid fever is the most frequent. The pathology of the non-inflammatory group is obscure.

3. The right and left legs are affected in about equal proportion ; over one-half of the cases are bilateral.

4. Trendelenburg's operation cured 78 per cent in a series of forty-one cases ; this is about the result generally reported. The tendency to recurrence of symptoms increases as the post-operative interval lengthens.

5. Schede's operation cured 33 per cent in a series of nine cases. The tendency to recurrence of symptoms as the post-operative interval lengthens is much greater after a Schede than after a Trendelenburg operation.

6. Division between ligatures of the saphenous vein does not ensure

permanent occlusion. The venous stream may be re-established by dilatation of anastomoses around the point of division, or by formation of varices in the scar, or by end-to-end anastomosis of the ligated stumps. The Schede operation is followed particularly by anastomosis of ligated stumps; of six cases examined, three showed an intact saphenous vein running directly through the scar.

7. Functional restoration of the saphenous vein may be, but is not always, accompanied by recurrence of symptoms.

8. Resection of 8 cm. or more of the saphenous vein at the saphenous opening made through a generous transverse skin incision is to be preferred to simple division of the vein.

9. Post-operative pulmonary embolism is rare, but has occurred between the fourth and thirteenth days. The onset is marked by sudden dyspnœa, cyanosis, tachycardia, and signs of collapse, accompanied by rise of temperature. The symptoms may subside rapidly, may persist with the physical signs of pulmonary infarct, or may be followed immediately by sudden exitus.

Local anæsthesia is satisfactory in practically every instance of Trendelenburg's operation.

REFERENCE.—[1]*Johns Hop. Hosp. Bull.* Sept. 1906.

VARICOCELE.

Priestley Leech, M.D., F.R.C.S.

The following operation for the cure of varicocele is described by Grimaldi Arturo.[1] The scrotum is incised longitudinally, commencing above, between the two pillars of the external ring; the tunica vaginalis is exposed and isolated; the tunica is then incised on its anterior aspect for 3 cms., and the testicle is luxated. The tunica is then pulled upwards and sutured together just above the testicle, so as to form a short and broad cord, which is situated posteriorly and somewhat internally to the testicle. The end of this cord is sutured to the lower extremity of the internal pillar of the inguinal ring. The scrotum is then closed with interrupted sutures. The author says this gives very good results in varicocele.

C. Riccioli[2] considers that there is no better method than that of Prof. Bonomo. He says that excision of the varicose veins and excision of a piece of the scrotal wall have their various disadvantages, and in Barile's operation, where muscular flaps from the oblique and transversalis muscles are brought down to suspend the testicle, the flaps lose their muscularity and become converted into fibrous tissue.

Bonomo's operation, though not easy to describe, is easy of performance. (*Figs.* 95 and 96 will give a good idea of the suturing after the description has been read.) An incision is made anteriorly along the scrotum from the inguinal fold down as far as the upper pole of the testicle; this incision divides the skin, dartos, and cellular membrane of Cooper; the cremaster and the underlying fibrous tissue are split to the same extent. For the whole length of the incision the musculo-aponeurotic layer is separated from the cord, care being taken that the veins and vas are not injured. Then from above downwards three loops of catgut or silk are passed through the cremaster and the membrane, the two ends being above, so that when the ends are tied they draw the cremaster upwards. The needle passes through the cremaster from above downwards, then through the tunica (taking care not to pass it too deeply to injure the testicle), and upwards through the cremaster, as shown in *Fig.* 95 ; the three loops are passed in the same way. When the ends are drawn on and tied the testicle is raised and the cremaster is shortened, the vertical incision in the cremaster becoming a transverse one. The incision in the scrotum is also sewn up in a transverse direction.

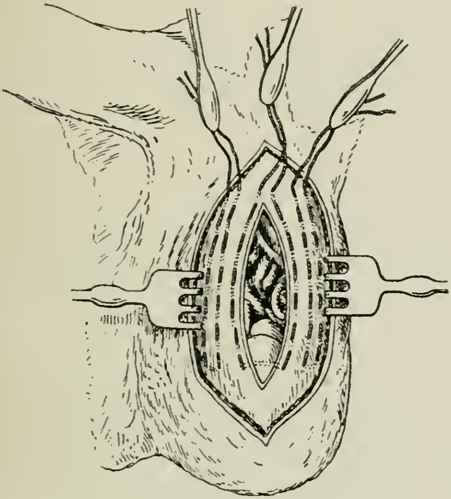


Fig. 95.

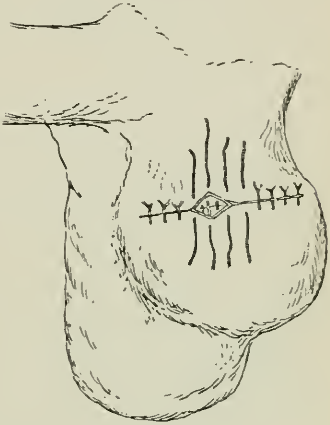


Fig. 96

REFERENCES.—[1]*Il Policl.* Fasc. 49, 1906 ; [2]*Ibid.* Dec. 9, 1906.

VEINS, SUTURE OF. (*See* BLOOD-VESSELS, SURGERY OF.)

VOLVULUS. (*See* INTESTINES, DISEASES OF).

VOMITING, CYCLICAL.

(*Vol.* 1906, *p.* 180)—Premising that this is a manifestation of acidosis, Rachford recommends **Calomel** gr. $\frac{1}{4}$; **Sodii Bicarb.**, gr. v ; hourly, for eight doses, followed in 3 hours by a **Saline Aperient.** Four hours after begin **Sodii Benzoat.**, gr. iij–viij, every three hours, with essence of papain and peppermint water. Sodii Bicarb. (℥ss per pint) may also be given every eight hours by the rectum. **Morphia**, gr. $\frac{1}{20}$ to $\frac{1}{10}$, subcutaneously, may control very severe cases ; and for prostration, **Saline Infusions** under the skin are useful. Give nothing by the mouth, except the medicines and water.

VOMITING, INFANTILE. (*See* DIARRHŒA AND VOMITING.)

VOMITING OF PREGNANCY. (*See* PREGNANCY, DISORDERS OF.)

VONULO.

J. W. W. Stephens, M.D.

This is a form of bronchitis described by F. C. Wellman[1] in Portuguese West Africa, characterised by severe pains, sometimes of the shooting variety, generally under the sternum. Dyspnœa is generally not marked, and there is little or no sputum, whereas in chronic bronchitis there is cough and expectoration. The author discusses the possibility of the disease being a form of malaria, but considers the evidence is against it.

Reference.—[1]*Pract.* Feb. 1907.

WARTS. (*See also* Rodent Ulcer.)

(*Vol.* 1889, *p.* 506)—These are said to disappear under the influence of continued doses of **Sulphate of Magnesia** (℥ss thrice daily for adults). This should be reinforced by **Salicylic Acid Paste**, followed by applications of **Saturated Chromic Acid** solution. Unna recommends a preparation applied on gauze, which contains 10 gr. **Arsenic** and 5 gr. **Corrosive Sublimate** to the ounce.

WHOOPING-COUGH. (*See* Pertussis.)

YAWS.

J. W. W. Stephens, M.D.

De Beurmann and Gougerot[1] consider that it is now established that yaws is a different disease from syphilis. They give a comparative table of the two diseases, some of the main points of which are here given.

Syphilis.	Yaws.
Europe: syphilis prevalent, yaws absent.	Fiji has yaws, but no syphilis.
Contagious and hereditary.	Not hereditary, only contagious.
A disease of adults, venereal, special localization.	No special seat of inoculation, a disease of childhood especially.
Contagion necessitating special human contact.	Contagion very easy, no special intercourse necessary.
Primary lesion constant, a chancre.	No definite chancre always present.
Glands in neighbourhood enlarged.	Glands not constantly enlarged.
Eruption always preceded by a chancre.	Eruption is often the first phenomenon.
General disturbance rarely intense.	Pre-eruptive constitutional disturbance well marked, fever, and pseudo-rheumatism.
Roseola non-itching.	Branny desquamation preceding the yaws, much itching.
Constant lesions of mucous surfaces.	No lesions of mucosæ, no iritis.
Tertiary syphilides produce scarring on healing.	Yaws heal without scarring unless artificially ulcerated.
Syphilis non-inoculable to a syphilitic.	Syphilis is inoculable to a patient suffering from yaws.

Reference.—[1]*Rev. de Méd.* May 10, 1907.

YELLOW FEVER.

J. W. W. Stephens, M.D.

Thomas[1] has succeeded in conveying yellow fever to a chimpanzee by means of infected *Stegomyia calopus.* On November 13th, the twenty-first day after feeding, twenty-nine mosquitoes were allowed to feed on a chimpanzee. Twenty-seven hours later the animal's temperature rose. On November 16th it was 38·3° C., and albumin appeared in the urine. November 22nd 0·7 gram per litre of urine was found. No vomiting and no icterus. The author regards it as a benign attack of yellow fever with recovery.

Reference.—[1]*Lancet,* Jan. 19, 1907.

Part III.—Miscellaneous.

SANITARY SCIENCE, 1907.

BY JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,
Medical Officer of Health, Metropolitan Borough of Lambeth.

AERATION AND FILTRATION OF SWIMMING-BATH WATER.

A system of aerating and filtering water of swimming-baths has been tried recently with success in various districts, e.g., Bradford, Leeds, Bury, St. Pancras, Bermondsey, Woolwich, etc., thereby insuring economy of administration without any apparent risk to the public health. The most recent installation is that at Bermondsey (Rotherhithe Baths). The water of the first-class swimming bath, which was filled on October 28th, 1906, was in constant use until April 8th, 1907, during which period 2657 persons used the bath. Analytically, the water was found after five months' use with aeration and filtration to be better than the untreated bath water as examined last year after a few days' use only. The Sanitary Authority has decided to continue the system of aerating and filtering the water of the first-class swimming bath, and to renew the water only twice during the summer, and once during the winter—a financial saving of great importance.

INFECTIOUS DISEASES AND SCHOOLS.

There is practically unanimity amongst sanitary and educational experts as to the part played by schools in the dissemination of infectious disease, but a difference of opinion as to the best method of preventing such dissemination, e.g., individual child exclusion, or class (or school) closure. Individual child exclusion is the more favoured, and, in this connection, the London County Council have recently altered and amended their regulations, thus :—

1. Children suffering from the following diseases must be excluded as follows : (*a*) *Mumps*—one month ; *Chicken-pox—minimum* two weeks, and until all scabs have fallen off ; *Whooping-Cough—minimum* five weeks from commencement of the whooping, and as long as the cough continues ;

2. Children living in houses in which either mumps, chicken-pox, or whooping-cough exists, must be excluded as follows : (*a*) Infants' Schools—*all* children, whether or not they have had the diseases ; (*b*) Other than Infants' Schools—all children who have *not* had the diseases.

N.B.—Where no medical man is in attendance, children and infants excluded from schools under paragraph 2, from infected houses, must be excluded for three weeks after mumps, and for two weeks after chicken-pox and whooping-cough.

With regard to *Measles* the following special regulations obtain :—

1. Children suffering from measles must be excluded from schools for at least one month.

2. Children living in houses in which measles exists, must be excluded as follows: (*a*) *Infants' Schools—all* children, whether or not they have had measles, must be excluded until the Monday following the expiration of fourteen days from the occurrence of the *last* case; (*b*) *Other than Infants' Schools*—all children who have *not* had measles must be excluded until the Monday following the expiration of fourteen days from the occurrence of the *first* case.

Children attending other than infants' schools, who have had mumps, chicken-pox, measles, or whooping-cough, need not be excluded from attendance at school.

Daily medical inspection of school children would appear to be the only satisfactory way in which to find out the infectious children requiring exclusion from school.

INSANITARY HOUSE-FLIES.

The house-fly as a disseminator of diseases of an infectious nature has been acknowledged, from time to time, but an important preliminary monograph has been published during 1907 by Mr. Robert Newstead, of the Liverpool School of Tropical Medicine, dealing with the subject in detail from the point of view of the house-fly's habits, life cycle, and breeding-places. The results may be shortly tabulated as follows:—

1. *Permanent breeding-places.*—Middensteads, containing horse manure only; middensteads containing spent hops; ashpits containing fermenting material.

2. *Temporary breeding-places.*—Collections of fermenting vegetable refuse; accumulations of manure at wharves; bedding in poultry-pens; temporary breeding-places destroyed by speedy removal of refuse, e.g., collections of stable manure removed at short intervals, ashpits emptied at intervals of seven to ten days, and bedding in piggeries.

3. *Non-breeding-places.*—Middens containing excessively moist and non-fermented cow-dung; patent ash-bins; refuse in ashpit saturated with water; human excreta lying in courts and passages.

4. *Chief breeding-places.*—Stable middens containing horse manure only, and fermenting ashpits, the larval stages of the house-fly occurring in thousands, and revelling in the fermentation heat.

5.—*Life Cycles.*—A complete metamorphosis, with four well-marked stages, e.g., the ovum (egg), the larva (maggot), the pupa (chrysalis), the imago (perfect fly)

LADY HEALTH VISITORS.

The Notification of Births Act, 1907, when adopted, will lead to the necessity for the employment by Sanitary Authorities of Lady Health Visitors (as opposed to Lady Sanitary Inspectors), whose chief duty will be to deal with the feeding and management of infants and the teaching of domestic hygiene in the homes of the poor. To give the baby a good start in life is of the greatest importance, and may lead to physical and intellectual vigour throughout the whole of its life. Maternal ignorance is at the bottom of the matter, and what is wanted is, consequently, the education of the mother, which can be most satisfactorily accomplished by the practical common sense and tact of Lady Health Visitors. All are agreed that women can do certain things better than men, being quicker of apprehension, and more deductive mentally. These qualities are specially valuable for the instruction of mothers in the case of children, and in personal hygiene.

There are, however, other duties fitted for Lady Health Visitors, e.g.: (1) Supervising cases of phthisis: (2) Supervising midwives; (3) Inspecting under the Infant Life Protection Acts: (4) Supervision of houses let in lodgings; and (5) Making preliminary inspections in connection with school children.

LEGISLATION DURING 1907.

The year 1907 has been prolific in useful Public Health measures, the chief of which may be briefly alluded to as follows:—

1. *Notification of Births Act*, 1907.—This is an Act to render compulsory the notification to the Medical Officer of Health of all births within thirty-six hours of their occurrence. The Act is adoptive. and applies to England and Wales. Scotland and Ireland (*vide* "Notification of Births," below).

2. *Butter and Margarine Act*, 1907.—This important Act, which came into force on January 1st, 1908, extends the provisions of the Margarine Act, 1887, and deals with the so-called "milk-blended" butter. Places wherein butter is blended, re-worked, or similarly dealt with, must be registered, and under inspection by the Board of Agriculture and Fisheries. The milk-blended butter becomes a kind of margarine in the eyes of the Act, and its sale is regulated as rigorously as that of margarine. It will require to be labelled, or designated by a fancy name (to be approved by the Board of Agriculture and Fisheries), and so its sale in the future will be as a butter-substitute, and not as a pure butter.

The subject of preservatives is also dealt with—their use being prohibited altogether or limited, in the case of margarine, or butter, or milk-blended butter.

Finally, adulterants in butter factories are prohibited—no substance (oil or fat) capable of being used for the adulteration of butter being allowed, whilst the maximum amount of water is definitely stated, viz.: 16 per cent for butter and margarine, and 24 per cent for milk-blended butter.

3. *Public Health Act*, 1907.—This is an adoptive Act, enabling Local Authorities to obtain considerable additional powers, which have hitherto been only obtainable by means of private Acts of Parliament. In this way Local Authorities will in future be saved the trouble and expense connected with the promoting of private Bills. The powers deal with streets, buildings, sewers, sanitary provisions, infectious diseases, milk supply, common lodging-houses, recreation grounds, fire brigades, slaughter-houses, etc., and will prove of great value. The Act appears to apply only to England and Wales (excluding London) and to Ireland—Part I without adoption, Parts II and III after adoption and by order of the Local Government Board.

4. *Education* (*Administrative Provisions*) *Act*, 1907.—This is an Act to make provision for the better administration by the Central and Local Authorities in England and Wales of the enactments relating to education, and includes an important Section (13), dealing with

the compulsory medical inspection of school children attending public elementary schools, and the power to provide for vacation schools, vacation classes, play centres, or other means of recreation during their holidays, etc. (*Vide* "Medical Inspection of Children," *infra.*)

5. *Public Health* (*Regulations as to Food*) *Act*, 1907.—This is an Act to enable regulations to be made for the prevention of danger arising to public health from the importation, preparation, storage, and distribution of articles of food or drink (other than drugs or water) intended for sale for human consumption.

6. *The Vaccination Act*, 1907.—This is an Act to substitute a statutory declaration of conscientious objection for the certificate required under Section 2 of the Vaccination Act, 1890.

7. *Factory and Workshop Act Amendment Act*, 1907.—This is an Act to amend the Factory and Workshop Act, 1901, with respect to laundries, and to extend that Act to certain institutions, and to provide for the inspection of certain premises.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

For many years past, the question of the inspection of school children has engaged the attention of Medical Officers of Health and others, but, until recently, the subject has been more of the nature of a counsel of perfection than a practical possibility.

On the Continent, and in America, systematic inspection of school children takes place ; and it would appear that England and Wales are about to follow suit, as a new Act of Parliament, the Education (Administrative Provisions) Act, 1907, which received the Royal Assent on 28th August last, states, in Section 13, that the powers and duties of a Local Education Authority, under Part III. of the Education Act of 1902, *shall* include :—

> "The duty to provide for the medical inspection of children immediately before, or at the time of, or as soon as possible after, their admission to a public elementary school, and on such other occasions as the Board of Education direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools."

This Section came into force on the 1st January, 1908, and it is the intention of the Board of Education, as shown in their Memorandum, that the inspection of school children shall, as far as practicable, be part of existing Public Health machinery, i.e., the administrative Public Health Departments of Sanitary Authorities, with such additional help as may be found necessary—the Medical Department of the Education Board having been established on the broad basis of public health.

The value of the systematic medical inspection of school children cannot be over-estimated from the point of view of public health, as, by such means, diseases or constitutional defects, in their early stages, will be detected, and can be, at such early stages, the better treated or dealt with. The result, in years to come, will undoubtedly be the improvement of the race, physically and mentally. That such systematic medical examination of children is needed is shown by recent reports that have appeared, dealing with the results of the examinations of infants and others attending schools. The medical defects found have reference to physique, tonsils and adenoids, vision, enlarged cervical glands, hearing, speech defects, mental defects, and discharges from the ears—the first four mentioned being most often met with. Eyes, ears, throats and noses, teeth and skin, call for systematic and careful medical examination, whilst constitutional defects and physical want of vitality also require careful medical attention. Mentally defective, feeble-minded, deaf, dumb, and blind children, epileptics, cripples, and those suffering from constitutional diseases, such as tuberculosis, syphilis, etc., can be separated out and dealt with as may be required. Only those children who are physically and mentally fit will be allowed to continue at school-work. In addition, statistics will quickly accumulate dealing with anthropological observations of children (e.g. height, weight, girth of chest, acuity of hearing and vision, etc.).

To obtain the greatest advantage from the systematic medical inspection of school children, treatment of a more or less simple nature must follow in school dispensaries, or school " clinics " (as they are called), wherein defects of vision can be corrected by glasses, teeth attended to, skin diseases treated, adenoids removed, and so on.

So much for general diseases. What is equally important is the subject of infectious diseases—schools being now recognized media for the spread of such diseases as measles, whooping-cough, chicken-pox, diphtheria, scarlet fever, etc. It is clear that systematic medical examinations will lead to the discovery of children commencing with infectious disease, and by the rigid exclusion from school, not only of such children, but also of all contacts with them, the spread of infection will be prevented. With the exception of those which are notifiable, we depend for our knowledge of infectious diseases upon the non-medical diagnosis of school teachers, attendance officers, etc., and this is not, in practice, satisfactory. Much more good would accrue if a systematic examination of all school children were made by medical men, and all doubtful cases of infectious diseases isolated and excluded from schools, as also all contacts. This exclusion may be individual or collective, i.e., separate children, or a whole class or school—the latter for (*a*) infectious outbreaks, (*b*) disinfection purposes, or (*c*) insanitary conditions of school premises. In this connection, reference may be made to the abolition in March, 1903, of what was known as the "Epidemic Grant," allowed under Article 101* of the Elementary Education (1901) Code. By this Article, a grant was made for all children excluded from attendance at school on account of epidemic disease, but, unfortunately, this salutary provision has been abolished, despite the protest at the time of practically all Sanitary Authorities, who thereby lost a most powerful lever in promoting the health of children attending public elementary schools, by keeping away all infectious and recently or incompletely convalescent scholars. To-day, the exclusion of children from schools affects school managers by reducing the attendances upon which schools are graded, and salaries and grants dependent. To put the matter shortly, a premium is now offered to keep the school attendances up at all costs, by compelling the attendance of children who may be found at the time to be suffering from doubtful illness, and whose presence in a class or school may cause the spread of infectious disease. The "Epidemic Grant," as it was called, was regarded as a national insurance against school infection, and, as such, was a sanitary influence of very great practical value, being allowed to schools where the average attendance had been seriously diminished owing to the exclusion, under medical advice, of infected children, or children from infected houses. By its abolition, children may now return to school before they are completely convalescent from acute infectious disease, whilst it is exceedingly difficult to exclude the attendance at school of children, who, although in fair health themselves, are capable of spreading infection, either having themselves suffered from slight attacks, or because they have been recently in contact with cases of such diseases.

MUNICIPAL MILK DEPOTS.

The work of the Municipal Milk Depôts progresses slowly, though statistics are accumulating that show the great good that is effected by the systematic and regular feeding of infants and children with specially-prepared or modified cows' milk, under medical supervision. Their educational value for mothers and others is becoming more and more acknowledged, especially in connection with the visiting of infants and children at their houses. There is no doubt that infants and children properly and regularly fed (even on artificial lines) do well, and escape not only death, but also ill-health—the common results of improper and irregular feeding.

An important deputation from the Infants' Health Society waited upon the President of the Local Government Board during 1907 with reference to the milk supply of infants. Sterilization of milk was condemned, on the ground that such a process reduces nutritive value by destroying the enzyme that is naturally present, and coagulating the proteids. Scurvy and rickets are stated by some observers (fortunately very few) to result. As an alternative process, refrigeration is highly spoken of. The subject is one that could be settled once and for all by a full scientific enquiry, carried out on behalf of the Government by means of a Royal Commission or Departmental Committee. The point to remember is, that milk, as at present supplied, is (speaking generally) unclean, and the question naturally arises, " What is the best to do under such circumstances ? " It is no answer to suggest that a pure milk supply should be provided—such is a counsel of perfection. The commonsense view would appear to be to take precautions to prevent, as far as possible, the dangers that must arise from using unclean milk—and sterilization or pasteurization appears to meet the case, even though there be some slight interference with the nutritive value of the milk. Better that than the much greater harm that may result from using milk teeming, more or less, with living bacilli, some of which may be pathogenic.

NON-ATTENDANCE AT SCHOOL OF CHILDREN UNDER FIVE.

Another way in which infectious diseases are spread at some schools is through the attendance there of children under five years of age. The age limit of school attendance should be raised, as the present attendance of infants is regarded by most sanitarians as a waste of money, and a danger to health—measles, whooping-cough, and diphtheria being specially prevalent and dangerous amongst children under five years of age. The Education Acts have reference only to children of five years and upwards, but the method of giving grants also to children between three and five years of age—a method adopted by the Education Department to encourage attendance at school of children of that age period—has resulted, during the past twenty years, in a very large number of children between three and five years of age having passed through the infants' departments of the public elementary schools, and many outbreaks of disease, more especially measles and whooping-cough, have resulted therefrom, as well as many deaths, and a very large amount of permanent ill-health. It is most desirable, from a public health point of view, that all children under five years of age should be excluded from public elementary schools, having regard to the amount of infectious disease that occurs amongst children of that particular age-period. If the schools are closed against them, some other sort of accommodation will have to be found, at least for some, viz., *crèches*, infants' nurseries, etc. In this connection it must be remembered that the conditions of school life (crowded rooms, mental strain, and fatigue) are such as would not obtain in a *crèche* or infants' nursery, and the vital resistance of the young children will, consequently, be greater in the latter case.

Finally, there is the question of the sanitary condition of the school premises or buildings—an important consideration. Unless such buildings are kept in proper sanitary order and condition, illness amongst the scholars and teachers must of necessity follow. Lighting, ventilation, sanitary arrangements, amount of floor space, cubic space per child, etc., require careful attention, both by the Board of Education and by the local Education and Sanitary Authorities, as when once the buildings have been erected within a district, they fall under the supervision of the Sanitary Authority in the usual way. The importance of the Sanitary Authority, therefore, being consulted in connection with all plans of new school buildings, goes without saying.

NOTIFICATION OF BIRTHS.

The year 1907 will be notable for the passing of the Adoptive Notification of Births Act, 1907, by which the early notification (within thirty-six hours of occurrence) of all births to the Medical Officer of Health is made compulsory throughout England and Wales, Scotland and Ireland. Primarily, the duty of notifying (under penalty) a birth to the Medical Officer of Health devolves upon the father of the child, and if he be non-resident in the house at the time of its occurrence, then upon " any person in attendance upon the mother at the time of, or within six hours after, the birth." The notice must be given by posting a prepaid letter or postcard—within thirty-six hours after the birth, at the office or residence of the Medical Officer of Health. Addressed and stamped postcards, containing the form of notice, must be supplied without charge to Medical Practitioners and Midwives who apply for the same. This early notification is in addition to, and not in substitution for, the requirements of the Act relating to the registration of births, and applies to any child born after the expiration of the twenty-eighth week of pregnancy, whether alive or dead. The Local Government Board has power to adopt the Act for the area of any Local Authority which has power to adopt the Act.

It is to be regretted that the Medical Profession has thought fit to oppose the Act, on the ground that the compulsory notification of births may be a breach of professional etiquette. It is true that, under the Act, medical men are, under a penalty, to notify all births attended by them, and that, too, without any remuneration for so doing, but, despite that omission from the Act, the Medical Profession might assist the Health Authorities in their endeavours to prevent, as far as possible, infantile mortality. This *early* notification of births, followed by early visitation of the mothers and infants, will prove most useful to Sanitary Authorities, as the Registration of Births Act gives forty-two days after occurrence in which births can be registered—a length of interval that is regrettable, as many infants born die within that time, thereby preventing the adoption of any satisfactory measures for the controlling of infantile mortality.

The Corporation of Huddersfield, the first Sanitary Authority to obtain (in 1906) legislative power for securing early compulsory notification of births, have published an important report, showing the beneficial results that have been obtained therefrom in that district. The Huddersfield Act came into force on November 1st, 1906, and is carried out under the supervision of the Medical Officer of Health, assisted by two assistant medical officers (females) and the members (over 100) of the Huddersfield and District Public Health Mission. The mothers and infants are visited early, for it is at the very earliest stage of her motherhood that the mother requires the best available advice, and it is just then that she most readily welcomes and assimilates teaching as to the best method for her child's welfare. Wherever practicable, breast-feeding is urged. The principles involved in the visiting are: (1) Not to cross the threshold unless an invitation is given to enter; (2) Not to sit down, unless a seat is offered; (3) To remember that every room of a cottage has as much right to privacy as a lady's drawing-room. The results, statistically expressed, are as follows:—During 1907 the infantile mortality was 85 per 1000 births, as compared with 138 during 1906, and a mean of 135 for the years 1897–1906. The Huddersfield infantile mortality figure is 22 per cent lower than those for the 76 great towns. The 1906 and 1907 statistics cover periods of nine and six months only, but are striking, even allowing for this fact, and deserving of the serious attention of all Sanitary Authorities, and those persons who are interested in the question of the prevention of infantile mortality, which causes at present such a great wastage of human life.

PHYSICAL CONDITION OF CHILDREN ATTENDING SCHOOLS.

Much attention has been given during 1907 to the question of the physical condition of children attending public elementary schools, and large numbers of statistics have been issued in connection therewith. Amongst these, special reference may be drawn to a return published by Dr. W. Leslie Mackenzie and Captain A. Foster, dealing with the physical condition of the children attending the public schools of the Glasgow School Board. It is interesting, as showing that theoretical ideas may work out satisfactorily in practice, at least sometimes. Seventy-three primary and higher-grade schools were investigated, and it was found that, of children aged from five to eighteen years, the average weight of the one-roomed boy was 52·6 lb., of the two-roomed boy 56·1 lb., and of the three-roomed boy 60·6 lb.—the respective heights being 46·6 inches, 48·1 inches, and 50·0 inches. Similar and comparable results were found to obtain in the case of girls. The large numbers of scholars dealt with (72,857) would seem to show that the poorest child suffers most in growth and nutrition, and that the one-roomed child, whether boy or girl, is always, on the average, distinctly smaller and lighter than the two-roomed, and the two-roomed than the three-roomed, and so on.

SANITATION OF THE TERRITORIAL ARMY.

Surgeon-General Sir Alfred Keogh, K.C.B., M.D., LL.D., delivered an address in 1907 before the Society of Medical Officers of Health, dealing with the proposed sanitary organization of the Territorial Army, the successors of the late Volunteers. All are agreed that epidemic disease in war is preventable, and must be prevented—such prevention in an army in the field resolving itself into two heads, unit sanitation and sanitation of geographical areas. The units are battalions, regiments, and batteries—large masses of men leading a nomadic life, traversing large tracts of country, camping in places, often for long periods, and placed under conditions admirably adapted for destruction by disease. The geographical areas have reference to the base of operation, as well as for each post or station on the lines of communications, with the provision of hospitals, etc. It is proposed, in the general reorganization of the Volunteer Medical Service, to provide a Sanitary Medical Service, by asking the Medical Officers of Health of the country to combine in a great voluntary organization, having for its object the preservation of the health of large bodies of men who may one day be required to defend the country.

SCHOOL HYGIENE INTERNATIONAL CONGRESS.

The second International Congress was held in London in 1907, and was attended by about 2000 delegates from all parts of the civilized world. In addition to the medical inspection of schools and school children, many other important subjects were dealt with, e.g. (1) Lighting, heating, and ventilation of schools ; (2) Care of teeth ; (3) Attendance of school children under the age of five years ; (4) The teaching of hygiene for teachers and scholars : (5) Closure of classes or schools, and exclusion of children from schools, in relation to the prevention of the spread of infectious and contagious diseases ; (6) The prevention of overcrowding, fatigue, and loss of sleep ; (7) The school in relation to tuberculosis, with the need for proper cleansing of the class-rooms ; etc.

THE TUBERCULOSIS PROBLEM.

The publication of the second interim Report of the Royal Commission on Human and Animal Tuberculosis during 1907 has not materially added to our knowledge, but shows that tuberculosis is communicable from animals to man, e.g., through the media of milk, milk products, flesh, etc., and that, consequently, the opinion expressed by Prof. Koch, at the London International Congress in 1901, was wrong. There should, therefore, be no relaxation on the part of Sanitary Authorities in carrying out preventive measures.

Bovine tubercle bacilli are somewhat different in their microscopical appearances from human tubercle bacilli, being slightly shorter and thicker, not quite so luxuriant in their growth on artificial media, and of a lower virulence—differences in degree only, and not in kind. Bovine tubercle bacilli, inoculated or introduced by food into bovine and other animals, produce tuberculosis, the effects varying in degree from a rapidly fatal acute generalized tuberculosis to a limited retrogressive disease. Further, accidental inoculation of man with the bacillus of bovine tuberculosis sets up localized tuberculosis. Human tubercle bacilli, inoculated or introduced by food into bovine or other animals, produce tuberculosis—generally a limited retrogressive disease, and rarely (if ever) a general tuberculosis in the case of bovines, pigs, and rabbits, but in other animals (e.g., guinea-pigs, monkeys, etc.) a generalized progressive tuberculosis.

In about 23 per cent of tuberculosis cases examined for the Report, the tubercle bacillus found was shown to possess the characteristics (morphological and cultural) of the bovine tubercle bacillus, pointing to the bovine bacillus having the power to grow in the human body, or, in other words, to the human body being capable of being infected by bovine tuberculosis through tuberculous milk, and (to a lesser degree) through tuberculous meat.

The preventive measures against the spread of pulmonary tuberculosis amongst human beings may be classified, or summarized, as follows: (1) Compulsory notification; (2) Dispensaries; (3) Hospitals for advanced cases; (4) Sanatoria for early cases; and (5) Working colonies for convalescents. (*See* TUBERCULOSIS, page 577.)

A Tuberculosis Exhibition was opened in Dublin in October, 1907, by the Lord-Lieutenant of Ireland, who also read a special message from his Majesty the King on the subject.

THE VALUE OF THE INTERCEPTING TRAP.

A valuable contribution has been published during 1907, dealing *inter alia* with the value of the Intercepting Trap, to abolish which there has recently been a tendency in some professional quarters. The contribution consists of a series of carefully carried out bacteriological investigations and experiments by Major W. H. Horrocks, to determine the conditions under which "specific" bacteria derived from sewage may be present in the air of ventilating pipes, drains, inspection chambers, and sewers, from: (1) Bursting of bubbles of sewage; (2) Dried sewage (on the surfaces of pipes), which is separated and carried by currents of air, etc.; (3) Ordinary normal flowing of sewage.

The conclusions arrived at from the experiments are: (1) Specific bacteria in sewage may be ejected into the air of ventilation pipes, inspection chambers, drains and sewers by, (*a*) the bursting of bubbles at the surface of the sewage, (*b*) the separation of dried particles from the walls of pipes, chambers, sewers, and probably (*c*) the ejection of minute droplets from flowing sewage; (2) A disconnecting trap undoubtedly prevents the passage of bacteria, present in the air of a sewer, into the house-drainage system; (3) An air inlet, even when provided with a mica valve, may be a source of danger, when it is placed at or about the ground level.

LEGAL DECISIONS

AFFECTING MEDICAL MEN AND THE PUBLIC HEALTH

BY JOSEPH PRIESTLEY, B.A., M.D., D.P.H.
Medical Officer of Health, Metropolitan Borough of Lambeth.

ADULTERATION OF FOOD AND DRUGS.

DAWES *v.* WILKINSON (Appeal Court).

Sale of Food and Drugs Act, 1875, s. 6—*Rum not of the Nature Substance, and Quality Demanded—Notice Exhibited, "Spirits not of any Guaranteed Strength."*

This was an appeal against the decision of the Derby Justices, who convicted the appellant (Dawes) under s. 6 of the Sale of Food and Drugs Act, 1875, for unlawfully selling rum not of the nature, substance, and quality demanded by the purchaser, in that such rum was more than the legal 25 degrees below proof, and despite the fact, admitted, that there was exhibited at the time a notice to the effect that the spirits sold were "not of any guaranteed strength."

Held, That the notice was bad, in that it did not bring home to the mind of the purchaser that the spirits will, or may, be diluted below the legal standard allowed under s. 6 of the Sale of Food and Drugs Act Amendment Act, 1879. *Appeal dismissed.*

EVANS *v.* WEATHERITT (King's Bench Division).

Sale of Food and Drugs Act, 1875, ss. 9 and 25—*Milk Prosecution—Warranty*—12 *Months' Contract without a Warranty Guarantee for each Consignment.*

A dairyman contracted with a company for a twelve months' supply, all the milk to be warranted pure and with all its cream. A consignment was accompanied with simple delivery note, giving date and name of dairy company. A portion of this consignment was found to be deficient in fat to the extent of 28 per cent. The contract was quoted as a warranty under s. 25 of the 1875 Food and Drugs Act. The Magistrate convicted the dairyman, and on appeal it was *held,* That the contract was a warranty, the terms of the contract laying down that the dairyman was to take all his milk from the dairy company in question for a period of twelve months, and that the decision of the Magistrate was wrong. *Appeal allowed.*

SOUTAR *v.* KERR (High Court of Justiciary).

Sale of Food and Drugs Acts, 1875, s. 17, and 1899, s. 16—*Milk—Refusal to Sell Article as Supplied to Public.*

The Sheriff-substitute held that a purchaser was not entitled to have his sample of milk from a special can and in a special way, and that the defendant in refusing to serve an officer from a particular can in a particular way was not guilty of " refusal to sell " under s. 17 of the Sale of Food and Drugs Act, 1875, or under s. 16 of the 1899 Act.

On appeal it was *held*, That the refusal amounted to an offence under s. 17 of the 1875 Sale of Food and Drugs Act, but not under s. 16 of the 1899 Act. *Appeal allowed.*

BY-LAWS.

NEWELL *v.* ORMSKIRK URBAN DISTRICT COUNCIL (Lancaster Palatine Chancery Court).

Public Health Act, 1875, s. 157—*A Portable Theatre is not a " Building," but a Temporary Erection—By-laws do not apply.*

A temporary portable theatre (78ft. 6in. long and 31ft. 4in. wide and 18ft. 6in. to 11ft. 6in. high) was erected in the district of the Ormskirk Urban District Council, without plans having been submitted. The District Council threatened to pull down the structure. Action was taken before the Court to restrain the District Council by injunction, and it was *held,* That the structure was not a " building " within the meaning of s. 157 of the Public Health Act, 1875, or of by-laws framed thereunder, and that an injunction may, therefore, be granted to restrain. *Verdict for Plaintiff.*

DAVIS *v.* BROMLEY CORPORATION (Appeal Court).

Public Health Act, 1875, s. 157—*Depositing of Plans for Approval by the Sanitary Authority—Compliance with By-laws—Power to Disapprove.*

Plans were sent in for approval by the Sanitary Authority, for the drainage of a house and an addition. The plans were refused, on the ground that they did not comply with the by-laws. An action was taken against the Sanitary Authority in the High Court, alleging that the plans were in accordance with the by-laws, and that the Sanitary Authority had acted maliciously and in breach of their duty as the Sanitary Authority in disapproving of the plans. An injunction with damages was asked for to restrain the defendants from acting in the way they were. The High Court held that no such action could be brought against a Sanitary Authority for refusing to approve plans, even though, in so refusing, they had acted maliciously, and in breach of their duty as a Sanitary Authority. An appeal was lodged for a new trial, and it was *held,* That the verdict of the High Court was correct, and that, if the Sanitary Authority had not really applied their minds to the question which they had to decide, the proper remedy was a *mandamus.* *Appeal dismissed.*

COMBINED DRAINAGE.

HARVEY *v.* JAYES (King's Bench Division).

Metropolis Management Act, 1855, s. 74—*Public Health (London) Act,* 1891, s. 2—*Drainage of Block of Houses by a Combined Operation —Drain or Sewer—Nuisance in Main Drain—Deviation from Plan submitted.*

A combined system of drainage was found to take the drains of 47, 49, 51, 53, 55, in a certain road, the combined portion passing through 51, and being found to be defective. A plan and application was produced, having been approved by the then Sanitary Authority, for the drainage of 26 houses in the same road (Nos. 35 to 85) in September, 1876, by combined operations, a combined drain passing through 49, and taking the drainage from Nos. 45, 47, 49, 51. The Magistrate held that the plan, submitted and approved in September, 1876, had not been carried out, and that the combined drain under 51 was, therefore, a "sewer."

On appeal, it was *held*, That the Magistrate's decision was correct, and that the combined drain under No. 51 was a sewer repairable by the Sanitary Authority. *Appeal dismissed.*

FACTORIES AND WORKSHOPS.

HOARE *v.* ROBERT GREEN, LIMITED (Appeal Court).

Factory and Workshop Act, 1901, s. 149—*Making and Adapting Flowers for Sale—Premises used are a Workshop—Manual Labour.*

A shop and a room behind were used as a retail florist's business, in which young women were employed to serve in the shop, and to make bouquets, wreaths, etc., in the room behind. No abstract was exhibited as required by s. 128 of the Factory and Workshop Act, 1901. It was held by the Magistrate that the room was not a workshop within the meaning of the Act, but on appeal it was *held,* That the Magistrate's decision was wrong, the work of the young women being manual labour exercised by way of trade in the making of articles, and adapting them, for sale. *Case remitted to the Magistrate with order to convict.*

MATRON OF FEVER HOSPITAL.

WOOD *v.* EAST HAM URBAN DISTRICT COUNCIL (Divisional Court).

Public Health Act, 1875, s. 189—*Matron of Isolation Hospital—Dismissal by Sanitary Authority—No Written Contract.*

A matron was engaged by the medical officer acting on behalf of his Authority at a salary of £1 per week, with board and washing. There was no written contract. The Council asked her to resign, but this she refused to do. The Council, therefore, gave her one month's notice to leave. The matron claimed that she was entitled to three months' notice as reasonable, and a jury agreed, assessing the damages at £25. The Lord Chief Justice gave judgment for the defendant Urban Council, on the ground that the contract ought to have been in writing.

On appeal, the decision of the Lord Chief Justice was upheld, viz., that a matron can be dismissed at any time at the pleasure of the Local Authority and without notice, in the absence of special provisions in the contract of employment. *Appeal dismissed.*

MIDWIVES.

IN *re* FELDMANN (Appeal Court).

Midwives Act, 1902, s. 1 (4)—*Midwives—Employment of Uncertified Substitute—Misconduct.*

The Central Midwives Board removed a midwife's name from the official roll, on the ground that she had employed an uncertified person as her substitute, to wit her husband, contrary to s. 1 (4) of the Midwives Act, 1902. Against this decision of the Board an appeal was lodged, and it was *held*, That the word "employ" in s. 1 (4) of the Midwives Act, 1902, did not necessarily mean "employ for payment," that the Midwives Board was a body acting judicially, and that as they had before them legal evidence on which they were entitled to act, the Appeal Court could not interfere. *Appeal dismissed.*

RIVER POLLUTION.

West Riding of Yorkshire River Boards *v.* Robinson Bros. (Appeal Court).

Rivers Pollution Prevention Act, 1876, ss. 4, 6, 13—*Collecting Liquid from Factory—Consent of L.G.B. before Notice is Served.*

An order was made under s. 13 of the Rivers Pollution Prevention Act, 1876, by the Judge of the Huddersfield County Court against Messrs. Robinson Bros., with reference to the pollution of a stream, at the instance of the West Riding of Yorkshire Rivers Board. The defendants appealed to the Divisional Court on the ground that the plaintiffs had not given due notice as required by the Statute, in that the consent of the Local Government Board had not been previously obtained as required by s. 6 of the Act. The Divisional Court affirmed the County Court Judge's decision. The notice was served on August 6th, 1904, and the Local Government Board enquiry held on October 19th, 1904—the Board's consent being given on December 5th, 1904.

On appeal it was *held*, That the previous consent of the Local Government Board must be obtained before any notice is served under s. 4. *Appeal allowed.*

Staffordshire County Council *v.* Seisdon Rural District Council (King's Bench Division).

Rivers Pollution Prevention Act, 1876, ss. 3, 10—*Pollution of Stream by Entry of Sewage—Test of Pollution—Stream not Fouler Below than Above Entry of Polluting Liquids.*

A river was polluted by seventeen to twenty outlets of sewage, chiefly slops and urine, but the water below was as pure as, if not purer than, the water above—weirs being provided both above and below the points of pollution. The County Court Judge refused to make an order under s. 10 of the Rivers Pollution Prevention Act, 1876, on the ground that the pollution was not appreciable.

Held, That the test was whether or not the river, in its pristine state, would be polluted, and that the County Court Judge was wrong in law in deciding on the ground that the stream was not rendered more foul by the entry of the sewage. *Appeal allowed.*

SLAUGHTER-HOUSES.

Winsford Urban Council *v.* Taylor (King's Bench Division).

Public Health Act, 1875—*Public Health Acts Amendment Act,* 1890, s. 29—*Slaughter-house License—Period of less than Twelve Months.*

A slaughter-house license was granted to the licensee (Mr. Taylor) on August 22nd, 1906, for a period of a little over four months, i.e., until December 31st, 1906. The license was refused in January, 1907, and the slaughter-house being in use on February 4th, 1907, action was taken by the Urban Council, with the result that the Magistrates held that the license was not in force after December 31st, 1906.

On appeal it was *held*, That the Urban Council had no power to limit the terms of a license to a period of less than twelve months, having regard to s. 29 of the Act of 1890, which states that "nothing less than twelve months" shall be the period for licensing places as slaughter-houses. *Appeal allowed.*

GOODWIN *v.* SALE (Divisional Court).

Towns Improvement Clauses Act, 1847, ss. 125, 126—*Granting of License of Slaughter-house—Continuous User—Personal License.*

Held, That a license for the use and occupation of a place as a slaughter-house, granted under s. 126 of the Towns Improvement Clauses Act, 1847, is a personal license, and expires at the death of the licensee. *Appeal dismissed.*

SMOKE NUISANCE.

BATTERSEA BOROUGH COUNCIL *v.* GOERG (Appeal Court).

Public Health (*London*) *Act*, 1891, s. 4—*Nuisance from Black Smoke—Notice to Abate—Recurrence of Nuisance after 6 Months—New Proceedings necessary by virtue of Summary Jurisdiction Act*, 1848, s. 11.

On March 18th, 1904, a notice was served under s. 4 of the Public Health (London) Act, 1891, to abate, and prevent the recurrence of, a nuisance from black smoke from chimney of bakehouse. No further nuisance was observed until January 5th, 1906, when a summons was taken out in connection with the notice served on March 18th, 1904. The Magistrate held that, six months having expired, new proceedings must be taken, and on appeal it was *held*, That the Magistrate's decision was right, the occurrences not necessarily being connected with one another. *Appeal dismissed.*

TRADE REFUSE.

WESTMINSTER CORPORATION *v.* GORDON HOTELS, LIMITED (Appeal Court).

Metropolis Management Acts—Public Health (*London*) *Act*, 1891, s. 33, subsect. 2—*Summary Jurisdiction Act*, 1879, s. 33—*Hotel Trade Refuse, Definition, and its Removal by the Sanitary Authority—Decision of Magistrate under* s. 33, subsect. 2 *of the Public Health* (*London*) *Act*, 1891, *shall be Final.*

Held, That there is no appeal against a Magistrate's decision given under s. 33, subsect. 2, of the Public Health (London) Act, 1891, with reference to trade refuse. *Appeal dismissed.*

WATER SUPPLY.

HARROGATE CORPORATION *v.* MCKAY (Divisional Court).

Waterworks Clauses Act, 1863, s. 12—*Water Supply for Domestic Purposes—Water Used for Washing Motor Car of Medical Man.*

A medical man used water for washing his motor car, and was charged for using water for business purposes. The Magistrates dismissed the summons, but against this decision an appeal was lodged, on the ground that the water used for washing a motor car was water used for business purposes. On appeal it was *held*, That the water used was not water used for other than a domestic purpose—the motor car being used for the purposes of the profession of a medical man.

Appeal dismissed.

WOOTTEN *v.* BISHOP (Divisional Court).

Public Health Act, 1875, s. 62—*Proper Water Supply to a House.*

A brick-built lock-up greengrocer's shop, with a store behind, was found to have no water supply laid on—but simply a rain-water supply, consisting of a 40-gallon water butt. There was no w.c., or other sanitary convenience. The Magistrates held that a lock-up shop, in which no one lives, is not a house within s. 62 of the Public Health Act, 1875, which requires houses to have a proper water supply.

On appeal it was *held*, That the Magistrates' decision was correct.

Appeal dismissed.

FIELD & SONS *v.* SOUTHWARK BOROUGH COUNCIL (King's Bench Division).

Public Health (*London*) *Act*, 1891, ss. 4, 48—*Water Supply not Necessary for the Top Floor of a House which is Sublet to Separate Tenants on such Top Floor—Owner—Nuisance.*

A house was provided with a supply of water sufficient for the needs of the inmates, so long as the house was occupied by a single tenant. The tenant sublet the top floor without the landlord's consent, and, in consequence, the water supply became insufficient, causing a nuisance, in connection with which the Magistrate made an order to abate against the owner.

Held, That, under ss. 4 and 48 of the Public Health (London) Act, 1891, a landlord is not required to provide a water supply sufficient for the needs of a top floor separately occupied—the landlord in such a case not being the statutory "owner," as he only receives the rack-rent of the house as a whole, and not of the top floor separately.

Appeal allowed.

THE EDITOR'S TABLE.

In this section we endeavour to bring before our readers the work that is being done by inventors, and the manufacturers on their behalf.

May we emphasize our desire that samples, together with descriptions and small illustrations (if necessary), should reach us by NOVEMBER. We experience some difficulty in obtaining compliance with this necessary condition, and trust that our friends will recognize its importance.

In respect to Pharmaceutical Products and Dietetic Articles, we are always ready when a sufficient quantity is sent to us *early in the year*, to arrange for it to be tested in Hospital practice and reported upon; under other circumstances our knowledge is necessarily more limited; but frequently the simple information as to where a particular preparation can be obtained is all the practitioner requires. We are anxious to express no opinion except as a result of practical knowledge, and it is owing to this fact that a notice in the *Medical Annual* has come to be valued. If we departed from the principles which have guided us since the first volume of the *Annual* was published, we should forfeit a position which enables us to be of some use both to the practitioner and the manufacturer.

MEDICAL AND SURGICAL APPLIANCES.

Abdominal Wound Suture and Retractor Forceps.—These are invented by Mr. Bone, of Lancaster, and consist of a pair of forceps as seen in *Figs.* 97 and 98, right and left. They have two flat blades, the lower blade being the smaller, set on a curved shoulder with long handles and a rack. The blades are tempered, so that they meet at the points first, and by means of the rack any pressure desirable may be obtained. They are designed for use in the following way:—The abdominal wound having been made and the peritoneum opened to the desired extent, the lower blade or smaller of the right forcep is introduced and placed parallel to the incision $\frac{1}{2}$ in. from the cut edge on the peritoneal surface; the forcep is then closed, and the upper blade presses on the skin parallel to the incision and $\frac{1}{2}$ in. removed from it; a firm grasp is thus taken of the one side of the incision. The left forcep is then similarly introduced and fastened. It

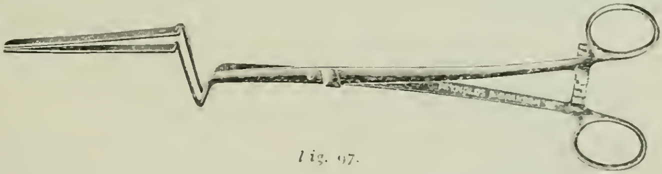


Fig. 97.

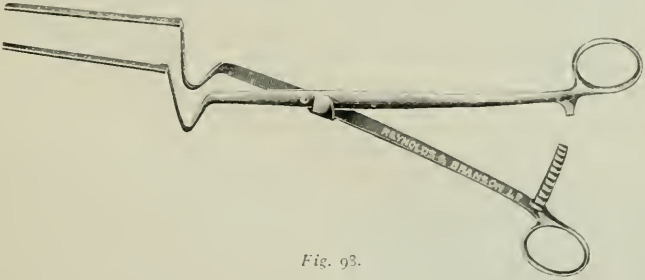


Fig. 98.

is now easy for an assistant standing well towards the thighs of the patient to rotate each handle outward, that is to say away from the wound, and thereby to evert the edges of the abdominal wound, at the same time retracting it. If it be thought advisable to protect the edge of the wound in the abdominal wall, as in dealing with some focus of septic matter within the abdomen, this can be accomplished by placing a piece of sterile gauze round the edge of the wound before applying the forceps, when they will hold it firmly in position during any manipulation within. When the wound has to be closed, layer to layer, the assistant by a little pressure can approximate the edges of the wound with the cut surfaces everted, so that it is easy to pass a continuous suture along the cut surfaces of the peritoneum and another along aponeurosis or muscle, leaving the last stitch slack until the forceps are released and the lower smaller blades withdrawn, when the stitches may be drawn taut and tied together. This materially facilitates the closing in layers of the abdominal wound, and thereby saves time. The forceps could also be used for bowel clàmps, and would be useful in enteranastomosis. These forceps have been made by Messrs. Reynolds & Branson, Ltd., of Leeds. They facilitate in a remarkable manner abdominal operation, and afford protection to the lips of the wound during the necessary manipulation.

Anæsthetic Inhaler (McCardie's).—In spite of the numerous inhalers of elaborate construction which have been introduced during recent years, the practitioner tends to revert to the simple mask and the drop-bottle. McCardie's is made of metal, with two different sized face-pieces (one on either side), and a sponge in the centre (*Fig.* 99). It is therefore equally adapted for children and adults. It has a nice appearance, is indestructible, and easily sterilized. It is equally serviceable for chloroform, A.C.E. mixture, or ether. The sponge is preferable to the lint in the ordinary mask, as the anæsthetic is not likely to drop through, and the admission of air is more ample. These cost 2/6 each, and are supplied by Messrs. R. Sumner & Co., Ltd., of Liverpool.

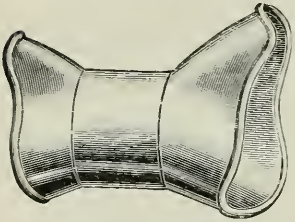


Fig. 99.

Apron (The Unique).—This apron is "unique" from the fact that it can be slipped on and off in a few seconds. This is managed by using wire springs in place of the usual tapes; we have made careful experiments with it, and have adopted it for hospital use, finding the waterproof form the best thing we have seen for surgical use and for nurses when administering baths or douches. These cost 8/–. In coloured linen they can be had for 4/–. These aprons will have a wide variety of uses for motorists, nurses, and mechanics. They are made by Messrs. Browne & Sayer, 104, Upper Thames Street, E.C. (*Fig.* 100.)

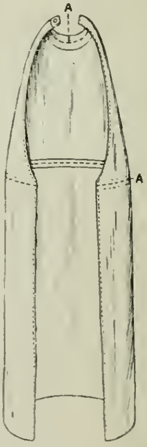


Fig. 100.

Asepsis of the Nails.—Two appliances with this object are sent us by Messrs. R. Sumner & Co. One is a metal nail cleaner which has a very efficient arrangement for pushing back the skin at the base of the nail. The cost is 9d. The other is a nail-brush in a wide-mouthed bottle (*Fig.* 101), which it is intended shall be filled with an antiseptic solution. This costs 1/6. Personally, we think that under no

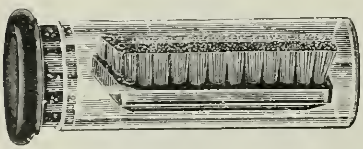


Fig. 101.

circumstances should an instrument be put under the nail for cleansing purposes, and that the use of a nail brush *for the nails* is only permissible prior to an operation. At other times, if the part of the nail which shows dirt is removed with scissors, the nail will grow so closely to the skin that the need for ordinary cleansing of the nails gradually disappears. The nail-brush is none the less an excellent way of applying an antiseptic to the hands.

Bladder (Continuous Irrigation of).—The following method has been devised by Mr. R. J. Willan. At the bottom of a metal can of 2-gallon capacity are two outlets on the same level. To each of these is attached a piece of stout tubing with a stopcock on the end, while to the latter is fitted rubber tubing of $\frac{3}{16}$ inch and $\frac{1}{16}$ inch bore respectively. The larger leads to Mr. W. G. Richardson's ingenious modification of the Cathcart pump; the smaller one is introduced directly into the large suprapubic tube occupying the bladder opening, which also contains the second tube which leads to the Cathcart pump. Fluid is thus introduced into the bladder through one tube, while the bladder washings are exhausted through the other, a continuous circulation in the bladder being thus kept up. Great care must be taken not to introduce lotion into the bladder until the "exhaust" is properly working; otherwise there will be an overflow into the bed. Therefore, to avoid the possibility of such an accident, always turn off both taps before interfering with any portion of the tubing.

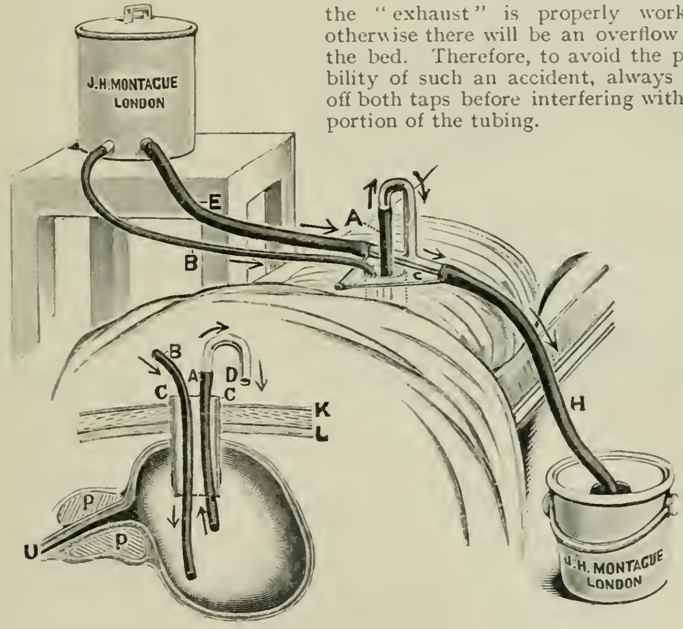


Fig. 102.

This method has been used a number of times, both in hospital and in private practice, with excellent results. Usually the bladder is aseptic in the course of forty-eight hours or so. The lotion used was weak bicyanide or perchloride of mercury, or boracic acid. The apparatus is made by Mr. J. H. Montague, 69, New Bond Street, W. (*Fig.* 102.)

Bladder, Drainage of.—A new apparatus for drainage after suprapubic cystotomy, devised by Dr. Hamilton Irving, late House Surgeon St. Peter's Hospital for Stone, consists of a celluloid cap, provided with outlet tubes, which fits over the suprapubic wound. Elastic pressure, supplied by a strap passing round the abdomen, keeps it in contact with the skin and prevents leakage, the urine running out through indiarubber tubes into a urinal placed in the bed. The celluloid cap has a lid, which is easily removed, and allows of inspection and irrigation of the wound. The chief advantages of this apparatus are: (1) That, without hampering the patient's movements, it keeps him dry and comfortable after operation until the wound is healed. (2) It encourages the wound to heal more quickly, since discharges and sloughs are not prevented from escaping by a plug of soddened dressing; (3) It diminishes the labours of nurses and surgeons, since dressings have not to be continually changed. Moreover, irrigation of the bladder can be accomplished very quickly without removing the apparatus and without any danger of wetting the patient and the bed; (4) It does away entirely with the cost of dressings. The apparatus is very easily applied, and needs little or no attention afterwards. It is being used at St. Peter's Hospital for Stone in nearly all cases of suprapubic cystotomy, and has given great satisfaction. It is made by Mr. J. H. Montague, 69, New Bond St., W.

Caddy Receptacle.—Messrs. Ferris & Co., Ltd., of Bristol, have introduced a newer and cheaper form of stand for their "Ever Ready Caddies." They are made in various sizes to meet the requirements of practitioners, and are quite the most convenient form of keeping dressings. The illustrations explain themselves (*Figs.* 103 and 104).

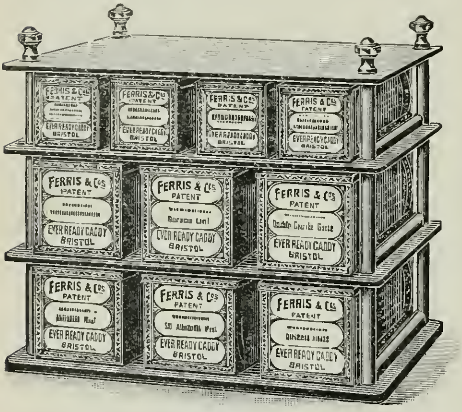


Fig. 103.

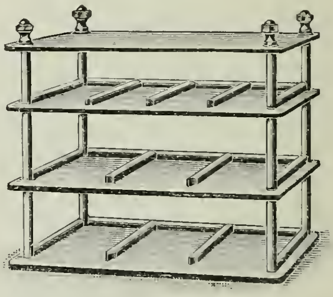


Fig. 104.

Calcium Salts (Apparatus for Estimating).—Dr. Blair Bell has worked out a method of estimating the calcium salts in the blood, urine, milk, or tissues, which has been described in the text of this volume. It consists essentially in causing the calcium to combine with oxalic acid, and then counting the crystals of oxalate of calcium with an ordinary hæmocytometer plate. The method is too lengthy for ordinary clinical use, but is valuable to the specialist. Mr. T. Hawksley, of 357, Oxford Street, W., supplies the necessary apparatus, which is very simple. (*See* Blood, Examination of, p. 145.)

Crutches (Light Hospital).—We have been very pleased with a really light and comfortable hospital crutch which has been sent us by Messrs. Ferris and Co., Ltd. It is of the French pattern, and much lighter than those in ordinary use. They only cost 8/6 per pair, fitted with indiarubber caps. They supply a great want, as the cumbersome and uncomfortable crutches which our poorer patients have had to use are not very helpful to their infirmities. When the tops of these crutches are padded they would do for the best class of patients, because they are so much lighter than those usually sold.

Catheter Cleaner (**Nickel-plated**).—Of the many devices for cleansing catheters, this little invention appears to be the most practical. It is simply an adaptation of the adjustment to an ordinary water-tap such as is used for garden-hose (*Fig.* 105). It is nickel-plated, with an opening made to fit the inside of the catheter. All that is necessary is to fit one of these to the ordinary water-tap (½in. or ⅝in. sizes are supplied), attach the catheter, and flush it out. The great force of the narrow stream makes it very efficient. This appliance is supplied by Messrs. R. Sumner & Co., Ltd., of Liverpool, and costs 2/6.

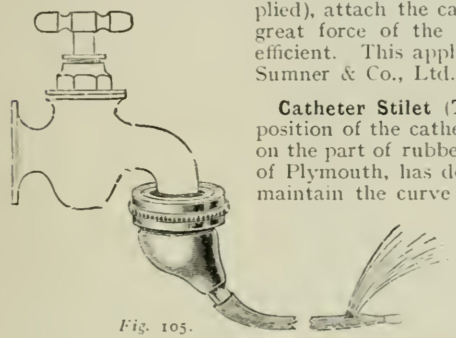


Fig. 105.

Catheter Stilet (**Tying in**).—To combat the disposition of the catheter to "creep," more especially on the part of rubber catheters, Mr. Reginald Lucy, of Plymouth, has devised a stilet, rigid enough to maintain the curve necessary to prevent expulsion of the instrument, and yet sufficiently pliable to avoid any damage to the urethra or bladder, should the patient become maniacal or delirious. The device consists of various sizes of thin silver tube, coned where fitting the bore of the catheter, furnished with rings (for tying-in) and a well annealed silver loop—about 6 in. long—which can be bent to any desired curve, either before or after passing the combination into the bladder. (*Fig.* 106.)

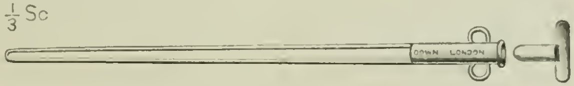


Fig. 106.

A plug is fitted for cases where continuous bladder drainage is not employed. Messrs. Down Bros., Ltd., are the manufacturers.

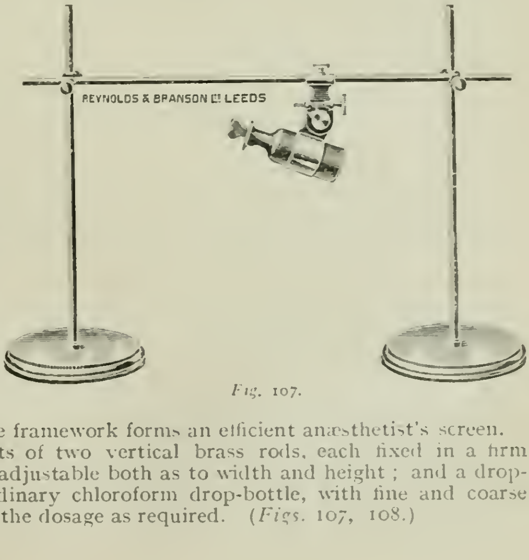


Fig. 107.

Drop-Bottle Regulator and Anæsthetist's Screen (**Rowling**). —This simple apparatus improves the drop-bottle method of chloroform administration by giving a continuous instead of an intermittent dropping; by enabling a precise dose to be given, which can be accurately regulated; and by liberating the hand hitherto occupied in holding the drop-bottle. The mechanical arrangement is of the simplest possible construction, and the framework forms an efficient anæsthetist's screen.

The apparatus consists of two vertical brass rods, each fixed in a firm base; a horizontal rod, adjustable both as to width and height; and a drop-bottle holder for an ordinary chloroform drop-bottle, with fine and coarse adjustments to regulate the dosage as required. (*Figs.* 107, 108.)

The advantages obtained are that the safety of the patient is increased and the type of anæsthesia is improved ; while the operation area is efficiently protected. The safety of the patient is increased by the regularity of the the administration, as contrasted with the necessarily somewhat irregular administration of hand-dropping, and a uniform instead of a variable anæsthetic atmosphere results.

The safety of the patient is increased by the precision of the dosage, and the accuracy with which it can be regulated. Four drops of chloroform are equal to one minim, therefore the number of drops in 15 seconds is the dosage of chloroform used in minims, per minute. The dosage can be varied at will, and regulated to a nicety by the fine adjustment.

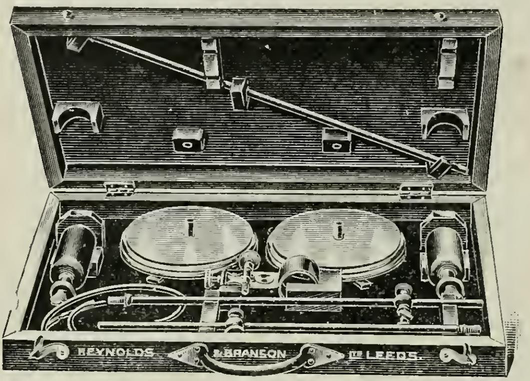
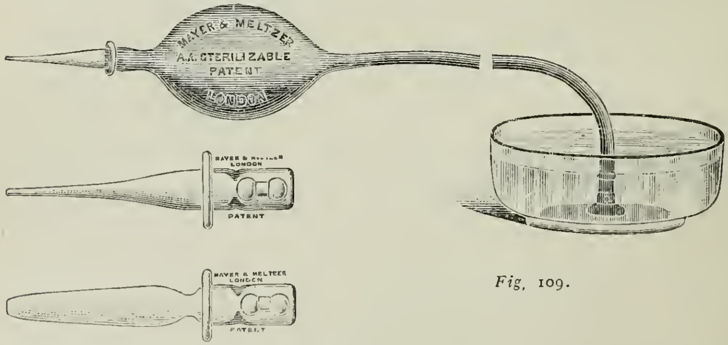

REYNOLDS & BRANSON Ltd LEEDS.

Fig. 108.

A Skinner's mask, a wrist watch with a centre seconds hand for timing the drops, and small pillows to lie between the uprights, are strongly recommended to obtain the best results with this apparatus, which is made with their accustomed skill by Messrs. Reynolds & Branson, of Leeds.

Enema and Syringe.—Messrs. Mayer & Meltzer, 71, Great Portland Street, W., have produced a new form of enema which has several distinct advantages. It is made entirely of rubber (of a special nature which is not affected by boiling) and glass, even the valve being of this material. It can be used with one hand, the bulb forming a handle by means of which the nozzle is introduced and held in position. Owing to the length of the efferent tube and the fixed position of bulb during use, the end of the tube is unlikely to leave the vessel containing the liquid. This is further guarded against by means of the suction end with which each is fitted, thus preventing the injection of air. This is a distinct novelty and obviously valuable. The syringe may be used for aural, nasal, rectal, or vaginal irrigation. The small diagram shows the aural or sinus pipe and the rectal nozzle. (*Fig.* 109.)



Fig, 109.

Enema (Sterilizable).—This enema is of the Higginson pattern, and is fitted with glass rectum and vaginal tubes (*Fig.* 110). They can be instantly adjusted to the rubber tube by an ingenious mechanism. The rubber itself can be boiled and rendered aseptic without injury. It is intended for use in the midwifery bag, and its value has been so rapidly recognized by the profession that it has had an enormous sale. It only costs 3/-, and meets every requirement that experience can suggest. There is nothing to get out of order. It is supplied by Messrs. R. Sumner & Co., Ltd., of Liverpool.

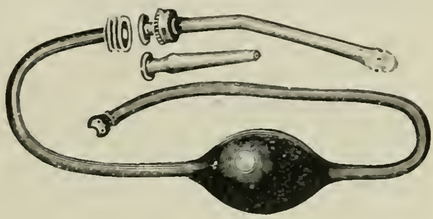


Fig. 110.

Equipoise Bedstead and Lounge.—We believe that no greater advance has been made in the comfort of patients, and the facility for nursing them, than the invention of the Equipoise Bedstead. It is a simple device in which the patient can be placed in practically any position by simply lifting a locking clutch. An idea of the mechanism can be obtained by the illustration we give (*Fig.* 111) of an "Equipoise Mattress" which has been devised for adjusting to any ordinary bedstead. It will be seen how easily it can be adapted to the position necessary or more comfortable for the patient. Its great advantage is that the patient can adjust the position without calling the help of the nurse. The makers, Equipoise Ltd., Ashford, Kent, also supply pliable wool or hair mattresses for use with the spring mattress.

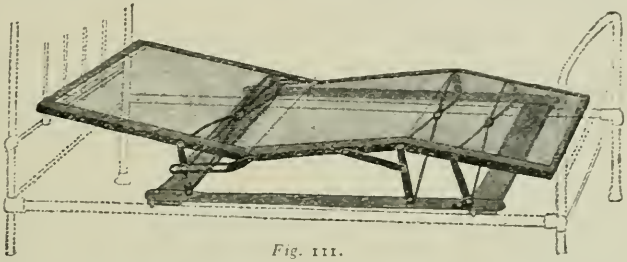


Fig. 111.

Another new invention of the same firm is the Equipoise Lounge, which is quite an inexpensive lounge chair, which adapts itself to any position and provides support to every limb. It is an ideal thing for the convalescent patient, and may also have some value in resting over-tired practitioners!

The Equipoise Couch, Sofa, and Bath-chair are all built upon the same principle, and will merit the attention of our readers who are anxious to secure the comfort of patients.

Glass Jars in Metal Cases.—This is a nice-looking appliance, suitable for carrying lubricant and soap in the midwifery and surgical bag, or for use in the consulting-room. It is convenient to have these two things handy, and to have them in a presentable form. The case, which costs 2/6, is circular, with two glass jars superimposed. It is supplied by Messrs. R. Sumner & Co., Ltd., Liverpool.

Fig. 112.

Glass Ligature Reels.—These have been suggested by C. Hamilton Whiteford, M.R.C.S., and are in two sizes: $2\frac{3}{4}$ in. long by 2 in. and 1 in. diameter respectively (*Fig.* 112). Catgut when wound on small reels usually assumes a corkscrew appearance when required for use; this difficulty is obviated by using larger reels of the above sizes. The smaller reel fits loosely inside the larger reel, economizing space, a consideration when the operation has to be performed away. The reels have perforations near their rims for attachment of ends of catgut. Price 1/6 each. Messrs. Reynolds & Branson, Ltd., Leeds.

Hypodermic Syringe.—Messrs. Ferris & Co., Ltd., send us an all-glass hypodermic syringe (*Fig.* 113) with a capacity of 20 minims, furnished with 2 steel needles, which they produce at 4/6. It is a very practical little instrument, and quite aseptic.

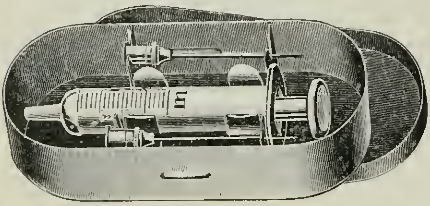


Fig. 113.

Laryngeal Mirror with Vulcanite Head Band. We noticed a mirror of this kind very favourably in a recent issue of the *Annual*. Its comfort and convenience in use is a thing of daily experience. The mirror was only suitable for consulting-room use. Messrs. R. Sumner & Co., Ltd., now send us a similar mirror (*Fig.* 114), so constructed that it is easily portable—more so than the ordinary mirror—and has one enormous advantage in the fact that the glass is protected from fracture by a special aluminium plate, which removes the whole fragility of the appliance, and will make the mirror outlast a large number of the ordinary pattern. The mirror is also backed with aluminium, which makes it very light, and the vulcanite head-band gives it a comfort in use which the practitioner will instantly recognize. It is made in three sizes, 3in. 3¼in., and 3½in. in diameter, the prices ranging from 11/6 to 12/6. We can highly recommend this appliance.

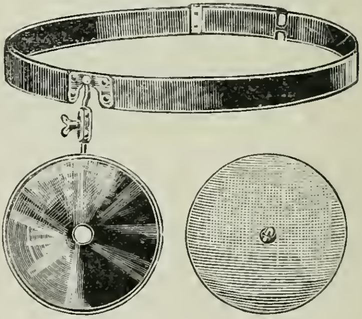


Fig. 114.

Ligature Bottle.—A wide-mouthed glass bottle with metal cover is the latest idea of Messrs. Ferris & Co., Ltd., for carrying ligatures. It enables the ligature to be wound on a large reel, so that it is not so screwed up as when the small reels were in vogue. It is quite a handsome appliance, and only costs 2/-.

Lyxhayr Bed-Stuffing.—This is a remarkable material, having all the spring of horse-hair, although it is of vegetable composition. It is used chiefly for stuffing mattresses, and being one-third the cost of horse-hair, and probably of greater durability, it is economical. But from the hygienic standpoint this is not the chief point in its favour. Lyxhayr is absolutely sterilized and odourless. To those who know the filthy abominations with which mattresses are stuffed this is a point of absolute importance. We believe that Lyxhayr is not only a revolutionary improvement in mattress stuffing, but that the time has come when only pure vegetable fibre should be allowed for the stuffing of hospital mattresses. At present we do not know what germs are introduced into the ward with the new mattress. We notice that a mattress suitable for the hospital ward is supplied at 23/-, and therefore the question of cost need not interfere with their adoption. Lyxhayr, Ltd., Grove Mills, Mitcham, Surrey, are the manufacturers.

Metal Box with Spring Cover.—A circular metal box, large enough to hold a flexible catheter, or needles and small dressings, is supplied by Messrs. R. Sumner & Co., for 1/-. It springs open when the sides are pressed. There are many occasions when a few boxes of this kind will prove to be just the thing wanted.

Midwifery Forceps.—It occurred to Dr. Taylor Downie, of Melbourne, during a lengthened experience of midwifery practice, that there was a manifest failure to provide the chief essential of a midwifery forceps, viz., a means of traction. He professes to obviate this by having each handle at right angles to the shank (*Fig.* 115). At first sight such a forceps may seem difficult of application, but from repeated use he finds it even simpler than with the old kind. Each handle is 2¾ in. in length, this being necessary to get a firm hold for its introduction, making, when locked with its fellow, 5 in. of somewhat uncomely length, and yet not too long if each hand of the operator is on each handle of the instrument when enforced traction is necessary; in practice it is found that this does not interfere with its efficiency.

In the ordinary position, with the thighs flexed and kept apart, or on the back with the thighs apart, the joined handle is not in the way, as one might expect, in the movement necessary for complete delivery. Where rotation is practised, the means of doing so by this instrument is simplified. The other accessories of forceps, such as for compression by the addition of a screw, or for axis-traction by a handle, may be applied to the shank or other part of this instrument as they are to others. Dr. Taylor Downie prefers keeping the handles locked by some material such as tape or string, that can be easily divided or unwound when not required further. Messrs. Mayer and Meltzer, of London and Melbourne, have manufactured these forceps for their inventor.

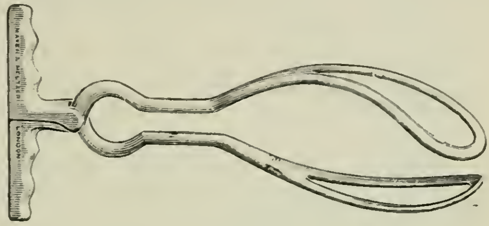


Fig. 115.

Midwife's Thermometer.—This is designed by Dr. R. J. Collie, Superintendent of the Midwifery Classes of the London County Council. This thermometer (*Fig.* 116) is intended for those who are unaccustomed to the use of the clinical thermometer. It is 5 in. in length, thus allowing for a clear open space; the bore is large, giving a broad column of mercury. The Midwives Act enacts that when the temperature rises to 100·4 a doctor must be sent for; in order to make this point clear at a glance, a thick red line is placed at 100·4, and the figures above this line are in red, with the word "DANGER" above in large letters; the figures below 100·4 are in black. The thermometer registers in four to five minutes; it is strongly made, and supplied in a vulcanite case. It is an intelligent adaptation of a scientific instrument for the use of the uneducated. The price is 3/- each, and the instrument is sent out by Reynolds & Branson, Ltd., Leeds.

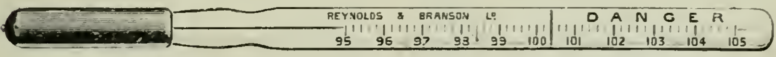


Fig. 116.

Nail Brush (Aseptic).—Messrs. Ferris & Co., Ltd., put up, at the cost of 1/-, a full-sized nail brush in a glass bottle, suitable for the nurses' bag, or the lavatory of a hospital.

Nasal Snare (Thorne's).—The old form of nasal snare is a tedious and irritating instrument to use when there are a number of polypi to remove, or it is difficult to snare them. The loop has to be readjusted after each effort, and if the wire breaks it takes a little while to readjust it.

With Thorne's instrument (*Fig.* 117) the loop re-forms itself by an ingenious spring mechanism, requiring no change of position of the instrument, or removal of the fingers from the rings. The whole instrument is larger and better adapted to the operator's hand. If the wire breaks, a fresh one can be instantly adjusted. The practitioner who has not got a Thorne's nasal snare should purchase one at once, and he will thank us for the advice. We would suggest to Messrs. Sumner, who supply this instrument (cost 12/6), that they should send with it a number of wires of suitable length, in a corked tube. We have had experience of the way in which wires for nasal snares tend to become rusty and imperfect when wanted. It would be better to send out these wires smeared with carbolized vaselin. With this instrument and a selection of wires, the removal of nasal polypi would become one of the simplest and most expeditious operations in surgery.

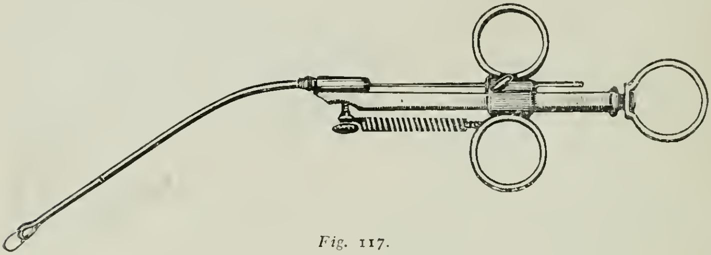


Fig. 117.

Ophthalmoscope (Bimanual).—In examining the right eye with this instrument, devised by Mr. Herbert Tanner, F.R.C.S., the upper hook is placed over the middle phalanx of the ring finger of the left hand, the edge of the little finger resting on the forehead of the patient; the lower hook is placed round the middle finger of the right hand, the instrument is held steadily, vertically, by a slight pull strain between the hands. The instrument being placed *in situ*, the operator's eye is brought to it (*Fig.* 118). The upper and larger wheel contains 8 minus and 7 plus lenses, and is operated directly

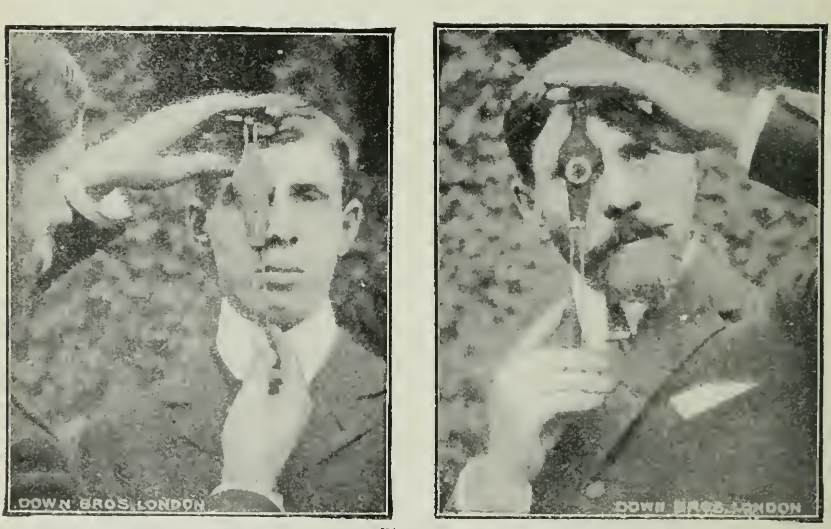


Fig. 118.

by the palmar surface of the thumb; the lower and smaller contains a ·5 and 16 each, concave and convex, and this is rotated to the required position before bringing it to the eye. The instrument gives over 60 combinations. It is made by Messrs. Down Bros., Ltd.

Pelvic Band.—Messrs. K. R. Schramm & Co., 116, Albany Street, N.W., send us a sample of their well-known pelvic band (which was devised by the late Dr. Protheroe Smith), to show the improvements which have been made in it. The principle is the same, but the alterations tend to greater lightness of the instrument, and increased comfort to the wearer. The general design of the appliance will be better understood from the illustration we give than from a description of its details (*Fig.* 119). It is an admirable support, and serves to correct the tendency to retroflexion and prolapse of the uterus, and also improves the figure of the wearer.

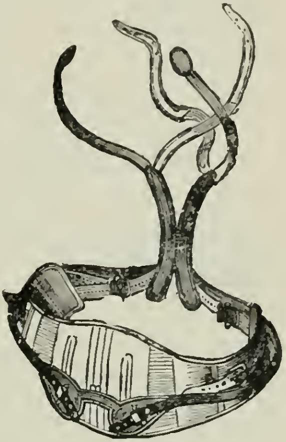


Fig. 119.

Perineal Horn.—This has been devised by Dr. Elliott, of Verulam, Natal, who writes as follows:—"I have adopted a device lately in midwifery which I believe to be of some use in preventing torn perineums. I do not know whether I am in all innocence copying somebody else's method, but it is simple enough to have suggested itself to many. When the child's head presents, I insert a highly polished thin horn of silver steel between the face and the perineum, and over this the front aspect of the head glides, the smooth surface of the medium equalizing the pressure on the perineum and facilitating its passage. I was led to employ this simple method by noticing that the perineal tear always occurred, or seemed to occur, after the brow was born, and the irregularity of surface lent itself to further rupture. I believe that this perineal horn is of use also in protecting the posterior wall of the vagina during passage of the head immediately prior to its expulsion."

We believe that the instrument will prove of the greatest service in accomplishing its purpose. Dr. Elliott does not mention that by using it a great deal of pressure can be taken off the perineum by manipulation of the handle of the instrument. Messrs. Fannin & Co., Ltd., of Grafton St., Dublin, are the makers, and have produced a most serviceable appliance.

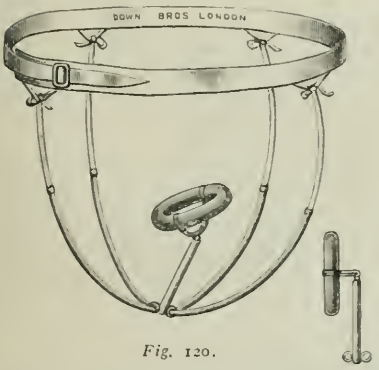


Fig. 120.

Pessary for Procidentia Uteri.—We illustrate here (*Fig.* 120) a new form of pessary for cases of "procidentia uteri," which has been devised by Mr. Seymour Stritch, and made by Messrs. Down Bros., Ltd. A ring fits into the vaginal fornices and supports the roof of the vagina, and enables the uterus to hang, as it were, within its circumference, free from all pressure and all possibility of retained discharges. The ring is held by clasps, which provide for its easy renewal when necessary. The clasps constitute the free extremities of a crescentic-shaped transverse bar. The curve is sufficiently deep to enable it to arch over the cervix without impinging upon it.

As there would be a difficulty in inserting a ring pessary with a rigid fixed stem, the latter has been constructed in a way to enable it to hinge, as shown in the illustration; this renders the insertion easier than that of an ordinary ring pessary of the same size.

Pocket Nebulizer (The Glaseptic). We have frequently expressed our preference for sprays and nebulizers which will contain only small quantities of fluid. Messrs. Parke, Davis & Co., of Beak Street, W., have sent us a pocket nebulizer which approaches our ideal. It nebulizes all fluids perfectly, it has no part likely to get out of order, and it is so small that it goes comfortably into the pocket. The construction will be easily understood from the illustration (*Fig.* 121). It is equally suitable for the mouth or nose. We strongly recommend this appliance.

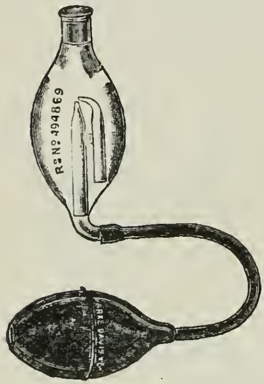


Fig. 121.

Pocket Needle Book.—Messrs. Ferris & Co., Ltd., have produced a neat little book containing 12 assorted surgical needles. This is quite a handy way of carrying needles, and aids in their selection when required.

Polygraph (Clinical).—This is a very ingenious and elaborate instrument by which it is possible to obtain graphic tracings of the blood-pressure, etc., at four different points of the body at the same moment. Thus a tracing of the jugular vein, the radial pulse, the apex-beat, and respiration can be recorded simultaneously. It is the invention of Dr. A. G. Gibson, and has been worked out by Mr. T. Hawksley, of 357, Oxford Street, W. Naturally such an instrument requires much elaborate mechanism, and is of necessity costly, although we believe the complete outfit can be purchased for £21. Such an instrument would be of the greatest service for clinical purposes in the hospital ward, and there is no doubt much valuable experience will result from its use. Mr. Hawksley has prepared a pamphlet giving full directions for the working of the instrument, which will be helpful to those who use it.

Post-Nasal Spray Tube.—This is intended for attachment to a douche pipe for flushing the posterior nares through the mouth. It has a fish-tail nozzle which distributes the spray well (*Fig.* 122). There are only a percentage of patients with whom this method of post-nasal irrigation is possible, but with those who will permit it, it is very efficient. Messrs. R. Sumner and Co., Ltd., of Liverpool, supply the appliance.

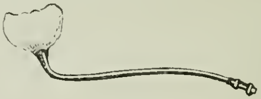


Fig. 122.

Pregnancy Corset.—This is one of the latest productions of the "Domen" Belts Co., 456, Strand, W.C. It is designed to allow for the gradually increasing size of the abdomen while maintaining the necessary support, and also to allow for the enlargement of the mammæ, which are also well supported (*Fig.* 123). By an ingenious arrangement, the breast can be easily exposed for purposes of lactation, and the corset instantly readjusted. It is like all the productions of this company, thoroughly practical. We have reason to know that the practitioner who concerns himself with the comfort of his patients in these matters earns their gratitude, and so recommend our friends to bring these corsets to the notice of their pregnant patients.

Fig. 123.

Rectal and Vaginal Tubes.—Messrs. Ferris & Co., Ltd., have introduced glass rectal and vaginal tubes with a vulcanite top, one end of which fits into the tube, while the other is adapted for fixing to the india-rubber tubing of the douche-tin. These only cost 1/6 complete, and will be found very useful in practice.

Saccharometer (Carwardine's).—With this simple instrument (*Fig.* 124) it is as easy to estimate the quantity of sugar in a specimen of urine as it is to discover its presence. There is no process of calculation required. It only costs 5/-, and no practitioner who knows of it will fail to possess it.

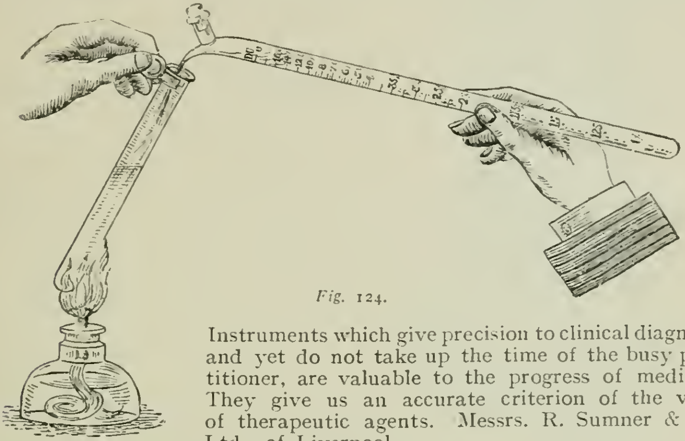


Fig. 124.

Instruments which give precision to clinical diagnosis, and yet do not take up the time of the busy practitioner, are valuable to the progress of medicine. They give us an accurate criterion of the value of therapeutic agents. Messrs. R. Sumner & Co., Ltd., of Liverpool.

Safety Bottles.—We have received from Messrs. Ferris & Co., Ltd., two kinds of bottles well adapted for carrying liquids in the surgical bag (*Fig.* 125). The first they call "Safety Bottles." These are oval, in white or amber glass, 3 oz. size, and have porcelain stoppers, rubber washers, and wire clips. These cost sixpence each, and are convenient for all fluids which will not act upon the rubber. The "Secure" bottle is a stoppered bottle with a metal screw-cap, which is adapted for any kind of fluid. Both are made in 1 oz., 1½ oz., and 2 oz. sizes, and cost from sixpence to 1/6 each. Quite the nicest bottles we have seen for carrying fluids, especially those which are volatile.

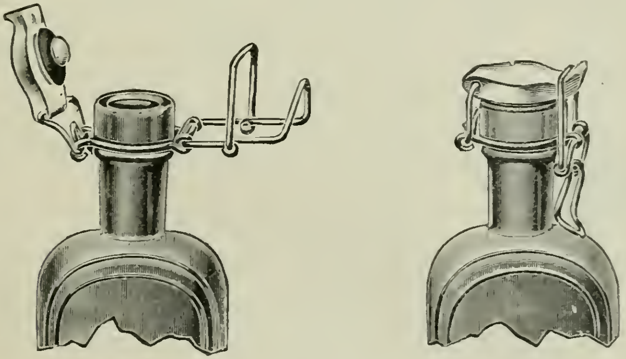


Fig. 125.

Sanatoria Pockets.—Under this name Mr. Frank A. Rogers, of 327, Oxford Street, W., has introduced pockets of an impermeable material which is capable of being washed and sterilized. They are made in various sizes, and intended to fit into the patient's pocket, where they are fixed by a safety pin. The purpose of such pockets is obvious, and as they only cost a few pence, there is no reason why our poorer consumptive patients should not be taught to use them. Another use the practitioner may find for them is as a convenient way of carrying sterilized dressings in the surgical bag. They are really excellent for this purpose.

Serous Effusions (Sir James Barr's Apparatus).—The "Bradshaw Lecture" has revived interest in the apparatus for the treatment of serous effusion invented by Sir James Barr, and made for him by Messrs. R. Sumner & Co. We noticed this fully in our 1905 edition. Sir James Barr's method consists of injecting a drachm of adrenalin chloride (1–1000) into the cavity after the effusion has been removed, and further injecting sterilized air to take its place. The use of this appliance has proved so satisfactory with further experience of its advantages, that there is at present a large demand for it. It costs £3 3s.

Spray, the "Glaseptic."—This is specially intended for the topical application of aqueous or alcoholic solutions, which it delivers finely sub-divided and in good volume. With the exception of the pneumatic apparatus it is made entirely in one piece, and is much less liable to get out of order than the ordinary form of spray producer, besides being readily sterilized and wholly free from danger of contaminating the liquid by metallic corrosion.

For the local application of medicaments in diphtheria or other diseases of the throat, for the cleansing of the nasal passages, for spraying wounds with antiseptic solutions, and various other purposes, this appliance has proved most effective. It is made by Messrs. Parke, Davis and Co. (*Fig.* 126.)

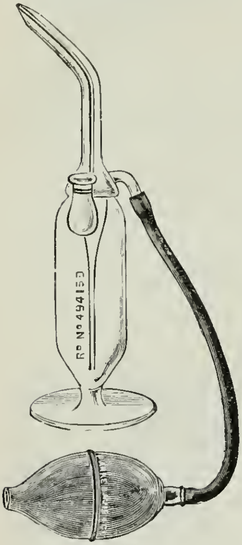


Fig. 126.

Spray and Drop Bottle (Combined).—This is all glass except the rubber bulb attachment, and there being nothing to get out of order, and no fine tubes to become blocked or broken, it will probably outlast a dozen sprays into the composition of which rubber and vulcanite enter. It can be used also as a drop bottle, so that it is quite a useful thing to have in the surgery or consulting-room. It costs 3/6. Messrs. Ferris & Co., Ltd., are the manufacturers.

Sputum Cup (Automatic).—This is at once an elegant and most ingenious appliance. As it is raised from the table it automatically opens, and when replaced after use, it closes tightly. This means that only one hand need be employed and no trouble taken by the patient. It is easily cleansed, and is altogether the most perfect of the appliances of its kind that we have yet seen. Messrs. Ferris & Co., Ltd., of Bristol, supply this. It costs 5/–, but is well worth the money.

Sterilizer for Dressings.—An improved high-pressure steam sterilizer for dressings is manufactured by Messrs. John Clarke & Co., Ltd., 8, Donegal Square West, Belfast (*Fig.* 127). It consists of two copper cylinders, surrounded by an outside jacket of Bavarian steel, beneath which is an asbestos lining. The lid (which is hinged) is made of polished gun metal or of malleable iron, the latter being slightly cheaper ; the ring in which the cover rests is in both cases made of gun-metal. All the fittings are of highly finished and polished brass, and consist of steam gauge (which also registers the temperature), safety-valve, water-gauge enclosed within a brass wire guard, exhaust tap, also taps for filling and emptying. The lid is held down by four screws with brass wing-nuts, which can be covered with vulcanite as a non-conductor if desired.

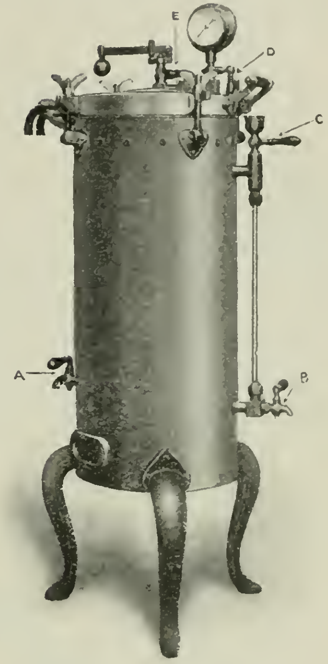


Fig. 127.

This sterilizer is a great improvement on those made with condensers, as the dressings are subjected to greater steam pressure and are perfectly dry when sterilization is complete. When the gauge indicates a pressure of 15 lb. the temperature will be about 250°, and the safety-valve will then allow the steam to blow off, this pressure and temperature being quite sufficient to render dressings perfectly sterile. These sterilizers are tested to a much higher pressure before being sent out.

Stethoscope (All Metal).—Messrs. R. Sumner & Co., Ltd., of Liverpool, send us a stethoscope of the old kind, which is made of metal, and the ear piece of which doubles up when not in use, for convenience of carriage (*Fig.* 128). There are some practitioners who still prefer this form of stethoscope for auscultation in cardiac cases, and this is very convenient. Cost 5/-.

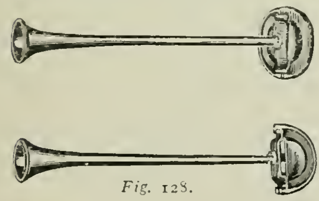


Fig. 128.

Thermo-Laine is the registered title of an actual wool, which it is proposed shall take the place of cotton wool. It is stocked by Messrs. Down Bros., Ltd. We have not received a sample, nor any particulars of cost.

Towel Clip.—Suggested by B. Mayhew Bone, F.R.C.S. Ed., for holding towels, etc., round incision during operations, with aseptic joint (*Fig.* 129). This is a small appliance, but one of very great use to the surgeon, and is made with that practical knowledge which Messrs. Reynolds & Branson, Ltd., bring to bear upon all their inventions. The price is 5/6.

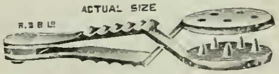


Fig. 129.

Tube Sterilizer (Portable).—The accompanying illustration (*Fig.* 130) is a half-size representation of a portable tube sterilizer and carrier for Graefe's knives. The glass tube is fitted with a removable rack provided with a guard at each end, within which the knife is securely fixed, so as to obviate the risk of damaging either edge or point in removing and replacing the instrument. With the rack and the instrument (blade downwards) in position, the tube is filled to the mark upon it with absolute alcohol, and the filling is completed by adding distilled water. Before use it is advisable to draw the blade of the knife several times through the hot water to remove the alcohol, and as an extra precaution. On no account should methylated spirit or ordinary tap-water be used for filling the tube, as the effect of either upon a good instrument is very detrimental.

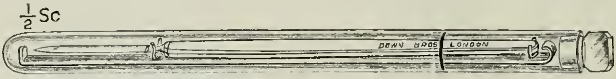


Fig. 130.

This device has been found useful for temporarily storing and preserving Graefe's knives, which are ready sterilized in case of emergency. Its portability is an additional advantage ; it can be carried in the surgeon's pocket, and the knife only removed by him, or under his supervision, a minute or two before the operation is commenced. This useful apparatus has been devised by Dr. J. Burdon Cooper, of Bath, and is made by Messrs. Down Bros., Ltd.

Tonsil Punch.—Messrs. R. Sumner & Co., Ltd., supply an aseptic tonsil punch (*Fig.* 131), the blade of which can be changed into four different positions to suit the operator. The whole can be taken apart for complete sterilization. They are supplied in three sizes, and cost 25/- each. The instrument is absolutely safe, rapid, and efficient in use, and is one that every practitioner should possess.

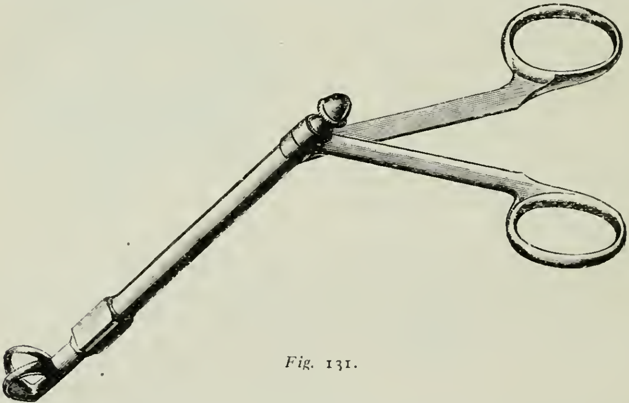


Fig. 131.

Ureteral Catheterization Sheath.—This is the first instrument devised to provide a covering for the ureteric catheter during the operation for its introduction up the ureter, and thus protect it from septic contamination. Previously the greater portion of the catheter was exposed to this serious danger. The sheath consists of two detachable portions, viz., metal and rubber. The metal portion is made up of a perforated screw cap, and a conical shaped portion (with broad base and funnelled apex) ; these are fixed to one another by two thin side rods. The screw-cap is a replica of the one on the upper end of the compartment, for transmitting the ureteral catheter of the Nitze catheterization cystoscope. A piece of rubber tubing, twenty-two inches long and with a bore of one-eighth of an inch, completes the apparatus. The rubber tubing is made to slip over the bulbous bell-mouthed apex of the " cone," and the whole is screwed on to the cystoscope. The ureteral catheter having been introduced into the rubber tubing, the catheter is pushed onwards by sliding the previously sterilized opposed thumb and index finger up and down the side rods. A lubricant, e.g., parolein, must be used for the inside of the tubing. The arrangement was devised by

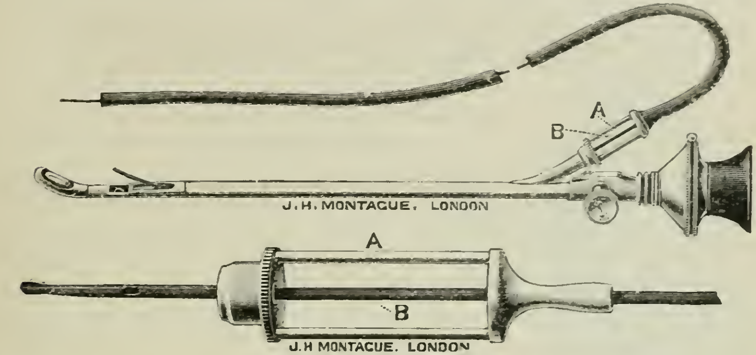


Fig. 132.

Mr. R. J. Willan, late House Surgeon St. Peter's Hospital for Stone, and is made by Mr. J. H. Montague, 69, New Bond Street, W. (*Fig.* 132.)

Vaginal Spray Douche (The Radical).—Of the many inventions for douching the vagina, this will commend itself to our readers because of its obvious efficiency. Its action will be best judged by reference to its illustration (*Fig.* 133). It will be seen that it opens up the folds of the vagina, so that the spray reaches every part of its surface. For the treatment of leucorrhœa, or for rendering the vagina aseptic, nothing better could be conceived. It is equally useful whether a douche can or a Higginson's syringe is employed. It is beautifully made, and the cost is only 6/6. Messrs. R. Sumner & Co.

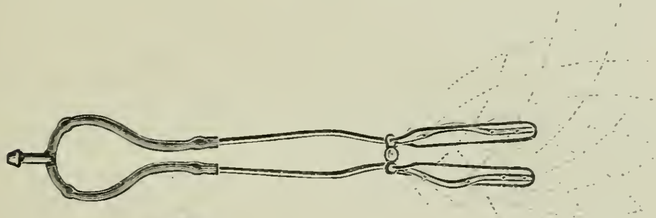


Fig. 133.

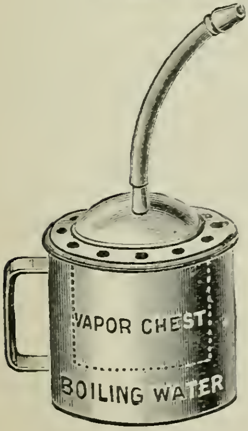


Fig. 134.

Vapour Inhaler (The Simplex).—The value of moist heat in the treatment of acute affections of the throat and larynx is too often forgotten. Mr. Frank A. Rogers, of 327, Oxford Street, W., has produced, at a cost of 3/6, a very simple and practical appliance (*Fig.* 134), which enables the patient to inhale hot vapour with or without medication. We have employed it with every satisfaction in a case of acute laryngeal catarrh.

The use of the appliance is indicated wherever there is inflammation of the upper air-passages, and we know of no other so convenient. A few drops of pine oil or eucalyptus add to the efficiency of the administration.

Vaporizer (The Simplex).—This vaporizer (*Fig.* 135), produces a continuous medicated vapour. It is self-contained and portable, simple in construction, and perfectly safe in use. It consists of a boiler, in the dome of which is an aluminium cup with perforated bottom ; this cup is filled with cotton-wool, upon which a few minims of the prescribed solution are dropped. The steam, generated by means of an ingeniously arranged safety spirit-lamp, passes through the impregnated cotton wool, and issues from the outlet as a thoroughly medicated vapour. Its use is specially indicated in bronchitis, catarrh, laryngitis, whooping-cough, lost voice, and other throat and chest affections. It is made in two sizes (8 oz. and 16 oz.), and is an ideal bronchitis and croup kettle, one of its advantages being that it can be placed at the bedside, or in any position which may be convenient to the patient. It is sent out by Mr. Frank A. Rogers, of 327, Oxford Street, W., the smaller size costing 6/6.

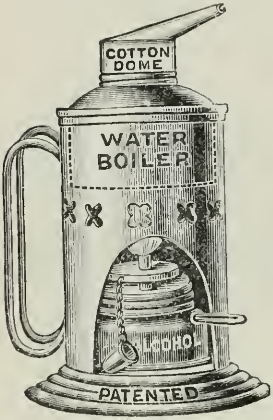


Fig. 135.

Ventilator and Draught Preventer.—We have received from Mr. Michael Hayes, 22, Thomas Street, Limerick, an ingenious arrangement for ventilating dwelling rooms. We have tested the sample apparatus sent us, and are able to recommend it.

The device consists of a thick piece of timber about 2½in. deep, which is fitted to drop across the bottom of any window casement in such a manner that the bottom sash closes upon the upper side of the ventilator and remains permanently 2½in. or so above its normal closed position. The apparatus projects for about an inch inside the sash, and is perforated by a number of L-shaped holes, which communicate with the outer air, and deliver it into the room with an upward current. The holes are all protected by metal gratings, and may, when desirable, be filled with any efficient disinfectant or aromatic deodorizer. The window sash, thus raised by the ventilator, also delivers a second upcast current of fresh air at the space between the upper and lower sashes thus created.

This appliance should prove of considerable value, especially if employed in conjunction with a good mica flap or other efficient ventilator inserted near the top of the chimney flue, this combination provides an exit for foul as well as inlet for fresh air.

Vulsellum Forceps.—Dr. J. S. Ashe, clinical assistant to Sir William Smyly, the Adelaide Hospital Dublin, has devised a new vulsellum forceps for which the following advantages are claimed :—

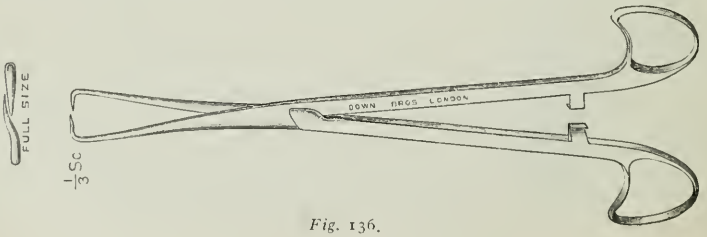


Fig. 136.

1. The points interlock, and therefore cannot give, especially on side pressure.

2. The under surfaces of the points are flattened, which prevents them pulling through the tissues, e.g., the os cervix, when required for such operations as curetting, dilating, or trachelorrhaphy; or in seizing the fundus of the uterus and holding it securely, or for perineorrhaphies, etc.

3. The upper surfaces of the points are flattened to prevent undue pressure on other tissues.

4. The handles have been made to cause as little pressure as possible on the hands. The foregoing points can best be seen from the diagram (*Fig.* 136). Messrs. Down Bros., Ltd., 21, St. Thomas's St., London, are the manufacturers.

Wide-Mouthed Bottle with Metal Case.—This is a 4-oz. bottle with a wide mouth and glass stopper (*Fig.* 137). It is enclosed in a metal case. Such a bottle has a number of uses in medical practice, for ligatures, or small articles of all kinds. Personally, we find them very useful for holding litmus papers used for testing the blood and skin, which rapidly become spoiled if exposed to the air. Cost 2/-. Supplied by Messrs. R. Sumner & Co., Ltd.

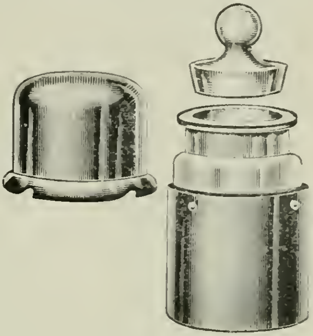


Fig. 137.

PROGRESS OF PHARMACY, DIETETICS, &c.

Alaxa.—This is a name given by Messrs. Burroughs, Wellcome & Co. to an aromatic liqueur of cascara sagrada. The dose is from one-half to two drachms.

Alkaline Bath Salt.—Messrs. Ferris & Co., Ltd., of Bristol, produce "Cartons" of alkali, each of which makes an alkaline bath of 15 gallons. This is a very useful treatment in rheumatic affections.

Analgesic Balm.—Under this name Messrs. Parke, Davis & Co. prepare a combination of methyl salicylate, menthol, and lanolin, which forms an efficient and convenient means of applying these remedies in the treatment of arthritic inflammations and painful affections generally. It is very effectual in nerve pains, in trigeminal and intercostal neuralgias, sciatica, etc., and, applied to the forehead in frontal headache or migraine, it affords relief from pain. It is supplied in collapsible tin tubes.

Analgesic Cream.—A combination of menthol, methyl salicylate, and lanolin, introduced by Messrs. Ferris & Co., Ltd., of Bristol, as an external application in rheumatism, sciatica, and lumbago.

Antisclerosin.—Under this name a combination of salts is put up in tablet form for the treatment of arteriosclerosis. It contains chloride, sulphate, phosphate, and carbonate of soda, magnesia and glycero-phosphate of lime. Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C., are the agents.

Aphrodine (Yohimbin Spiegel).—This is an alkaloid discovered by Dr. L. Spiegel, in the yohimbehe bark. When administered to animals in small doses it produced determination of blood to testicle and penis, causing swelling and erection. From Prof. Loewy's experiments it appears that this is due to the centre of erection in the spinal cord being stimulated. Experiments on men appear to have been followed by similar results in many cases. None of the observers have found ill results following its use either in the case of men or animals. It has been used for the cure of impotence with great success. Aphrodine is prepared in tablets, by Guestrow, each containing 5 mgrams of yohimbine hydrochlorate. These are given three times a day. Messrs. Chas. Zimmermann & Co. are the London agents.

Aspirin, Sulphonal, Trional, etc., in Tablets.—We notice that the Bayer Co., Ltd., 19, St. Dunstan's Hill, E.C., have put their valuable products into tablet form, rendering them much more easy to prescribe in a definite dosage, and we find by experiment that these tablets disintegrate readily in water. The tablets are put up in neat screw-stoppered bottles containing 24. The following list may be useful for reference :—

		TABLET.	DOSE.
Agurin	Diuretic	5-gr.	1–3
Aspirin	Antipyretic and antirheumatic	5-gr.	1–3
Helmitol	Urinary antiseptic	5-gr.	1–3
Heroin Hydrochloride	Sedative	$\frac{1}{24}$-gr.	1–3
Iodothyrine	Goitre, etc.	5-gr.	1–5
Piperazine	Uric acid solvent	5-gr.	1–3
Phenacetin	Analgesic	5-gr.	1–2
Protargol	Silver salt	4-gr.	
	Dose—One to 1 oz. water = 1 per cent solution.		
Salophen	Antipyretic and antineuralgic	5-gr.	2–3
Sulphonal	Hypnotic	5-gr.	1–3
Tannigen	Intestinal Astringent	5-gr.	1–3
Theocin Sod. Acetate	Diuretic	4-gr.	1–3
Trional	Hypnotic	5-gr.	1–3
Veronal	Hypnotic	5-gr.	1–3

Few firms can claim to have introduced so many absolutely new drugs which have met with the favour of physicians throughout the world.

Asthma Specific.—Under the name of Neboline Compound No. 21, Messrs Oppenheimer, Son, & Co., Ltd., have produced a compound which, when used with their well-known Aerizer, will control the asthmatic attack with almost absolute certainty. Not only is this the case, but we find that patients under this treatment require to use the remedy less and less frequently, and finally find no necessity for it. The remedy is a solution of hyponitrous acid gas containing, in addition to balsamic extracts, atropine $\frac{1}{3}$ gr. and cocaine hydrochloride 2 gr. to one ounce. It is almost identical with an American specific which has a very wide reputation.

Barley and Groats.—We have received samples of Robinson's Patent Barley and Robinson's Patent Groats. These invalid foods are household words in every-day practice. They enable the barley-water or the cup of gruel to be prepared in a few minutes, and when it is ready, it is not the less valuable because it is inexpensive. The tendency of late years has been to the use of foods much more costly, but not more nutritious nor digestible.

Bilitin.—This is an extract from folia helminthocorti, fol. jaborandi, ranunculus albus, and fol. tanaceti. This product is a brownish liquid, with a bitter taste. The dose is the contents of an original bottle, viz. 5-oz., to be slightly warmed and taken gradually within an hour, after which the patient has to lie on the right side for about five hours, then to take an aperient, say a dose of castor oil. Bilitin has been found to be particularly suitable in gall-stone troubles, as it breaks up the gall-stones, which, by the aperient, are eliminated through the rectum. Bilitin is quite harmless, and is best taken early in the morning on an empty stomach. Generally, one dose is sufficient, but sometimes it is found advisable to repeat the dose after five or six days. It is supplied by Messrs. A. & M. Zimmermann, 3, Lloyd's Avenue, E.C.

Biniodide Soap.—An antiseptic soap which can be relied upon to cleanse the hands before an operation is not such an easy thing to procure as is generally supposed. There is decomposition between the soap and the antiseptic, which frequently nullifies its action, or the more stable antiseptic is not strong enough to kill all germs. Biniodide of mercury is not only the most powerful antiseptic, but it is capable of being combined in a soap with its efficacy unimpaired. Under the name "*Asepso*" Messrs. Edward Cook & Co., Ltd., the well-known soap manufacturers, produce a soap containing ½, 1, or 3 per cent biniodide. We can commend this to our surgical friends as quite the best thing for their use.

Another soap made by the same firm commends itself to us. It is called *White-Tar Soap*, and contains anthrasol (Knoll), which is practically tar from which all the pitch and colouring matter has been removed. They issue this in 5 per cent anthrasol tablets, and also combined with oatmeal or sulphur: these should be useful in many cases of skin disease.

Bromoform (Syr. Co.).—This is an excellent way of dispensing this drug, and it affords much relief in spasmodic coughs. The preparation made by Messrs. R. Sumner & Co., contains codeine and aconite, and should be used in quite small doses in the case of young children.

Bromural.—This is a bromide of the valerian group, and is made by combining urea with bromide of bromino-valerianyl. It appears to us to have a distinct place in therapeutics, because it stands between bromides on the one hand and the hypnotics such as veronal on the other. We have used it in many cases during the past year, to soothe nervous restlessness, and sometimes the result was calm refreshing sleep; but bromural is not a remedy which can be relied upon in chronic insomnia to take the place of another hypnotic. When it causes sleep, the sleep is perfectly natural, and is followed by no depression. It has its limitations and its advantages, and when these are understood, the physician will learn to regard it as a very valuable addition to his resources. It is prepared by Messrs. Knoll & Co., of 8, Harp Lane, London, E.C.

Calcium Iodoricinoleate.—Calcium iodoricinoleate is a new salt containing a large proportion of iodine, which combines the therapeutic value of calcium and of the iodides. It is tasteless and odourless, and is not affected by the gastric juice. It produces no digestive disturbance, and is well tolerated by patients who cannot take potassium or sodium iodide. In syphilitic cases the results obtained compare favourably with those of treatment by the iodides. It has proved very successful in condylomata and other specific manifestations, and in ulcers, including rodent ulcer. Issued in boxes of 50. Messrs. Burroughs, Wellcome & Co. prepare a capsule of this salt, containing 3 gr.

Calcium Lactate.—Calcium lactate is employed to increase blood coagulability, which has been shown to be deficient in cases of urticaria and other affections. Its administration has proved successful in the treatment of urticaria, chilblains, certain forms of albuminuria, headache, and serum rashes. It is also employed in aneurysm and in various forms of hæmorrhage, including the hæmorrhagic form of small-pox; as a preventive and curative in hæmophilia, in uterine hæmorrhages, and preliminary to surgical procedure. Messrs. Burroughs, Wellcome & Co. prepare a "tabloid" calcium lactate, 5 gr., which is a convenient mode of administration. Messrs. R. Sumner & Co., Ltd., also supply this drug in capsules. Being soluble, we do not quite see the rationale of this method of dispensing it. We prefer it freely diluted.

Calomel Injections.—The value of calomel injections in the treatment of syphilis has never been questioned; it is the pain which follows their use that has rendered them practically unacceptable. Colonel F. J. Lambkin, R.A.M.C., has devised a method by which this difficulty has been overcome. By the addition of creo.-camph. to the calomel cream the pain following the injection is absolutely prevented. The fatty basis used in the manufacture of the cream is a natural constituent of the blood and, therefore, causes no local disturbance. The injection is made with a long needle deeply into the buttock. Messrs. Oppenheimer, Son & Co., Ltd., manufacture this calomel cream, and supply it in "Aseptules," each containing 15 minims, or in 1 or 2-ounce bottles. They also supply a similar cream, which contains the metal mercury, instead of calomel; this they call "Mercurial" Cream.

Cascoferrin.—This is a combination of tinct. ferri with cascara sagrada—being at once an iron tonic and a mild laxative. It is agreeable to the taste, and yields satisfactory results. It is made by E. Weigert, of Breslau. Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C., are the agents in this country.

Castoreum Bromide.—This is a combination of bromide salts with ext. valerian and castoreum in the form of an effervescing salt. It is useful in all conditions of nervous excitement, hysteria, and neurasthenia. It is an excellent combination, and has given good clinical results in the hands of several German physicians who have used it. It is manufactured by E. Weigert, of Breslau, and the British agents are Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C.

Catheter Lubricant.—In response to the wish for a good antiseptic lubricant for catheters, Messrs. R. Sumner & Co., Ltd. of Liverpool, put up a jelly in collapsible tubes which is very efficient for this purpose. Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C., also put up a special ointment under the name of "Catheterpurin."

Celery, Elixir of.—Messrs. Ferris & Co., Ltd., under this name, have produced a combination of celery, coca, kola, viburnum, etc. It is intended as a general nerve tonic and stimulant, and has proved valuable as a rapid restorative in cases of neurasthenia, and during convalescence.

Cellotropine.—This is a monobenzylarbutin, and represents an absolutely new theory in the therapeutic treatment of tuberculosis. It is a white crystalline powder, without taste or odour, almost insoluble in water, and dissolving in alcohol. It penetrates almost unchanged into the blood and lymphatic circulation. It possesses no toxic properties, as has been proved by Dr. Aufrecht in his article on "Cellotropine as a new Remedy in Tuberculosis." Dr. Kuehner, in his article, "New Method for the Treatment of Tuberculosis," writes: "When pathogenic germs, e.g., *Bacilli tuberculosis*, have entered the organism, and have settled and developed their power, the same organism, as explained, forms antibodies for the purpose of resisting and minimizing the energy of such toxins, by means of the enzymes of the glandular fluid. When it is possible to intensify these natural protective processes, a very important step towards the warding off of the mischief is attained. An agent for this purpose, however, must at the same time be perfectly non-irritant, non-toxic, free from unpleasant by-effects, and without deleterious effect upon the organism if taken for a long period. It must, moreover, be easy to take, and without disagreeable taste or odour. These expectations are fully attained in cellotropine.

"Cellotropine, when administered in a daily dosage of 5 grams (45 gr.), shows no disturbing or toxic effect upon the human organism, whether sound or unsound. The digestive organs are not injuriously affected by long-continued medication. Cellotropine acts upon tuberculosis of the lungs with a distinct healing effect, which is manifest by the bacilli diminishing in number and ultimately disappearing altogether. Probably this results from the fact that cellotropine increases the enzymes in the glands, and therefore also the alexins. The specific effect is noticed generally after a few weeks, at the latest after three months. So far as my experience goes, I have no hesitation in recommending colleagues who study tuberculosis to give cellotropine a good test, since I am so favourably impressed with the results attained." This is obtainable from Messrs. A. & M. Zimmermann, 3, Lloyd's Avenue, E.C.

Cholelith Pill.—This contains ac. sodium oleate $1\frac{1}{2}$ gr., sod. salicylate $1\frac{1}{2}$ gr., phenolphthalein $\frac{1}{6}$ gr., menthol $\frac{1}{10}$ gr. It has been found most effective in conditions of bile stasis, with or without formation of concretions. It is a new combination of drugs which appear to have marked power to increase the amount of hepatic secretion and to promote a due proportion of biliary acid salts wherewith to dissolve gall concretions, or at least so to diminish their size that they may be expelled naturally. These pills are made by Messrs. Parke, Davis & Co.

Chrysarobin Pencils.—These "pencils" enable chrysarobin to be applied to the affected part, and that only, and saves the staining of the linen which is almost inseparable from this drug when used as an ointment. They are a distinct improvement in pharmacy. Supplied by Messrs. R. Sumner & Co., Ltd., Liverpool. at 1/6 per doz.

Citarin Effervescens.—We are glad to see that the Bayer Co., Ltd., 19, St. Dunstan's Hill, E.C., have introduced citarin in the form of an effervescing salt, which has always appeared to us the best way of administering it. It is in the acute gouty attack that this drug shows to the greatest advantage. It should then be given frequently; when the attack subsides, a dose twice a day is sufficient. The value of this remedy consists in the fact that it forms easily soluble compounds with uric acid, and thus aids its elimination.

"Cocoids."—This name is given to pastilles of pure chocolate which contain medicaments in accurate dosage, by Messrs. Oppenheimer, Son. & Co., Ltd. They have added to their list Cocoids of Laxoin, which, being a mild laxative, is well suited for children; also Cocoids of Malt Diastase, which contain the digestive properties of malt in a state of activity never previously obtained. To give remedies which are both useful and agreeable is not without its importance to professional success.

Colalin.—This is a preparation of cholalic acid, the active principle of bile. It is an important substitute for the purified ox-bile of the pharmacopœia. Colalin has the effect of increasing the secretion of bile, and is an ideal cholagogue. It is best given in tablets (½-gr.), which are taken four times a day. We believe that this remedy has an enormous therapeutic field before it, because we have no other which will increase the secretion of bile as well as augment its flow. It should be useful in all conditions when fermentation takes place in the intestinal canal because the normal antiseptic is wanting. Messrs. T. Morson & Son, of 14, Elm Street, Gray's Inn Road, W.C., have also combined colalin with the anthraquinone of cascara, which has a mild laxative effect. This preparation is useful when we wish a mild cathartic action as well as that of a cholagogue.

Combretum Sundaicum (The Malayan Anti-opium Plant).—Much attention has been directed during the past year to this new drug from Malaysia, reputed in the East to be a cure for the opium habit. Elixir Combreti (Matthews) is a pleasantly-flavoured non-alcoholic preparation of the roasted drug, made by a process of decoction. It contains the water-soluble constituents of combretum in a concentrated form. It keeps well, and is designed to supersede the crude decoction which is unstable and troublesome to prepare. Given in doses of two fluid drachms with each diminishing dose of the opiate. It is supplied by Mr. Harold E. Matthews, Pharmacist, Clifton, Bristol.

Cylicine—Is a substitute for salicylates, and is stated to be free from their unpleasant effects. It is given in doses of 7 to 15 gr. thrice daily. Messrs. Chas. Zimmermann & Co., of 9 & 10, St. Mary-at-Hill, E.C., have introduced this preparation.

Derma-Colloid.—This is a fluid plaster, for abrasions, cuts, etc., which is practically painless in application. The fluid speedily evaporates, leaving a pliant and adhesive skin that protects the part and enables healing to take place rapidly. A convenient method of applying derma-colloid is to cut a small piece of gauze, sufficient to cover the wound, and place in position after painting the wound with the liquid. Then paint the gauze lightly with the remedy, when a flexible plaster is formed, affording thorough protection during the healing process, and is not easily washed off. It is prepared by Messrs. C. J. Hewlett & Son, 35–42, Charlotte Street, E.C., who also prepare it combined with tinct. benzoin co. or iodoform 3 per cent.

Dermoid.—Under this name Messrs. Ferris & Co., Ltd., of Bristol, produce a liquid court plaster for protecting abraded surfaces, blisters, etc. It is a very practical application, and should find a place in every surgeon's bag.

Diabeteserin.—This is issued in two forms for the treatment of diabetes in accordance with the theory of Dr. Manfred Fränkel, of Berlin. Diabeteserin I. contains the salts of Trunecek's serum and 0·0006 gram of eserine in every two tablets. Diabeteserin II. = diabeteserin I. with an addition of 0·0001 gram of atropine in every two tablets. The maximum dose is two tablets thrice daily. Diabeteserin II. should be given if diabeteserin I. does not produce the desired result in cases accompanied by pernicious constipation or by colic-like pains, as well as in obese diabetic patients. Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C., are the agents.

Duodenin Palatinoids.—Duodenal preparations have, according to cases reported in the *Bio-Chemical Journal*, a marked influence in reducing the quantity of sugar in cases of diabetes: " High percentages of sugar rapidly disappeared, and no recurrence has been recorded in cases so treated." It would be of great advantage that an extended trial should be made of this treatment. Messrs. Oppenheimer have made a palatinoid, 5 gr., which is very suitable for this purpose.

Egmol.—This preparation contains 40 per cent of finest olive oil, emulsified with fresh eggs and flavoured with best French brandy. It is a nutritious and stimulating food, which may be prescribed with excellent effect in wasting diseases of children or adults, and in convalescence from acute illness. For those patients who cannot tolerate cod-liver oil, egmol forms an excellent substitute ; indeed, experiments carried out by Cunningham (*Journal of Physiology*, vol. 23, p. 209) seem to show that, owing to more perfect assimilation, olive oil may be ranked above cod-liver oil as a flesh-former and heat-producer. Egmol is a perfect and stable emulsion, and in every way an example of elegant pharmacy. It is supplied by Messrs. Parke, Davis & Co.

Elixir Calcii Iodid.—This elixir contains calcium iodide in solution, combined with suitable flavouring agents. It will be found valuable in the treatment of gout, ulcers, chilblains. This is prepared by Messrs. Reynolds & Branson, of Leeds.

Ergotoxine.—Ergotoxine is a new alkaloid of ergot, which has a marked effect in stimulating the uterus, and in raising blood-pressure by its vaso-motor action. Messrs. Burroughs, Wellcome & Co. have made a " tabloid " hypodermic ergotoxine, which presents this active principle as a soluble salt in a chemically pure condition. It is chiefly employed to prevent or check post-partum hæmorrhage.

Fomitin is an extract from two parasitic plants, viz., *Hymenomycetin fomes* and *Fomes igniarius*, both found on the prunus tree. It is a reddish-brown, clear liquid, of a mushroom-like smell and a slightly bitter taste. It contains 5 per cent of the dry extract, and its reaction is alkaline. The chemical reaction towards lead acetate indicates the presence of highly organized acids or oxidation substances of the aromatic class. The whole influence of fomitin seems to lie in its action in the pelvic sphere. The ordinary dose of one or two tablespoonfuls is always well borne, and causes no disturbances or by-effects, even with extended use. In a few sensitive patients complaint of numbness in the head and slight dizziness was made, but even in these cases the symptoms were of very short duration. It has been used with success in diseases of the bladder, dysmenorrhœa, menorrhagia, and hæmorrhoids. It is obtainable from Messrs. A. & M. Zimmermann, 3, Lloyd's Avenue, E.C.

Formaldehyde Co. Tablets.—These contain a minute quantity of formaldehyde, with menthol, pepsin, citric acid, and sugar. They are intended for oral sepsis in cases of diphtheria, etc. The tablets are allowed to dissolve in the mouth, and are not unpalatable, nor do they cause irritation. They are prepared by Messrs. C. J. Hewlett & Son, 35–42, Charlotte Street, E.C.

Formamint.—We gave a brief notice of this preparation in our last issue. Since then we have submitted it to practical trial in a large number of cases where an antiseptic to the oral cavity was indicated. We have not only been particularly satisfied with the result, but also with the harmlessness and great convenience of the remedy, and we are glad to find that a large number of observers both in Germany and this country have recorded their satisfaction at its efficacy. Formamint is simply a combination of formic aldehyde and milk sugar, with citric acid added as a flavouring agent. The combination entirely removes the irritating effect of the formic aldehyde on the mucous membrane. The tablets in which it is supplied are quite palatable, and all that is necessary is to allow them to dissolve slowly in the mouth. Messrs. A. Wulfing & Co., 83, Upper Thames Street, E.C.

Formates.—Under the name Elixir Neurasthenicum, Messrs. Ferris & Co., Ltd., of Bristol, have made a combination of formates of sodium, calcium and quinine, and strychnine. Of the latter, each drachm contains $\frac{1}{125}$ gr. Messrs. Burroughs, Wellcome & Co. have also produced a preparation of which each fluid ounce contains: Calcium formate, 12 gr.; sodium formate, 6 gr.; magnesium formate, 6 gr. This is a useful and palatable preparation.

Formenthe Lozenges.—These contain formaldehyde, and are indicated for antisepsis of the throat and upper air passages. They are pink in colour and pleasant to the taste. Messrs. R. Sumner & Co., Ltd., Liverpool, are the manufacturers.

Formidine.—Formidine is an antiseptic suitable for internal or external use. Chemically it is methylene-disalicylic-acid-iodide, a condensation product of iodine, formic aldehyde, and salicylic acid. It is insoluble in water, alcohol, and dilute acids. In contact with alkaline organic secretions, it slowly dissolves, and develops the characteristic germicidal properties of its constituents; hence it is most useful for bacterial infections of the intestinal tract. The dose is from 1 to 5 gr. Externally it is used in place of iodoform as a stimulating, non-irritating dressing for wounds, ulcers, etc., and as a dusting powder for various skin affections. Its antiseptic power has been proved to be greater than that of iodoform, whilst it is free from offensive odour, does not stain the skin or clothing, and does not produce toxic effects when applied over large areas. It is made by Messrs. Parke, Davis & Co.

Gingament Tabloids.—These contain bicarbonate of soda and ammonia, ginger, sugar, and ol. menth. pip. The combination makes a very useful stomachic. Messrs. Burroughs, Wellcome & Co. are the manufacturers.

Glycerinum Cascara Sagradæ.—This is an improvement upon the B.P. preparation, as it forms a clear solution when dispensed, and does not deposit. It is made by Messrs. R. Sumner & Co., Ltd., Liverpool, and costs 1/6 per lb.

Glyceroform.—This is a combination of the formates and glycerophosphates of calcium, iron, quinine, potash, and magnesia, together with strychnine, pepsin, and diastase, prepared by Messrs. Ferris & Co., Ltd., Bristol. It is a powerful muscular and nerve tonic, stimulating the appetite, and increasing circulation and the digestive powers. Each fluid drachm contains $\frac{1}{125}$ grain of strychnine.

Glycerophosph. c. Format (Stephenson).—This is a distinct improvement on many preparations containing the same ingredients which we have examined. It is palatable, it is free from sugar, and has a very agreeable taste.

It is prepared without strychnine, which we consider an advantage, as in cases where the latter is indicated it can easily be added. This is prepared by Mr. Thos. Stephenson, F.C.S., 137, George Street, Edinburgh.

Glycerophosphates with Formates (Syrup of).—This preparation by Messrs. R. Sumner & Co., Ltd., contains 2½ gr. of the mixed glycerophosphates and 2½ gr. of the mixed formates to each fluid drachm. This is an excellent tonic in cases of physical and nervous debility.

Hæmatopan.—This is a concentrated food, containing about 50 per cent albumin, chiefly in the form of soluble hæmoglobin; it also contains extract of malt. It is given in doses of a teaspoonful thrice daily, either in its dry form, or in milk or soup. From its composition, it should be a very efficient agent in improving the blood in cases of anæmia, and seems well worthy of an extended trial. It is quite palatable, and may take the place of hæmatogen where patients dislike this drug. Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C., are the agents.

Herbanin.—This is a natural herbaceous iron preparation, without any artificial addition of iron. It contains in 100 parts 11·72 per cent extract, ash 0·2205, iron 0·00168, alcohol (for conservation) 11·6 per cent by weight, specific gravity 1·0263. Herbanin has been found to be readily taken, which is an advantage over other iron preparations; it is not decomposed by acid, and can therefore be given, without any restriction in the diet, before or after dinner. It has a very pleasant taste and smell, and is generally liked by children as well as adults. The appetite slowly improves after treatment with herbanin; digestion is not in the least disturbed, nor constipation caused; on the contrary the drug rather tends to regulate the bowels. The percentage of iron is comparatively small, but many members of the medical profession consider this its advantage, as it gives the constitution a chance to absorb the whole of the iron and utilize it for the improvement of the blood, whilst in many of these preparations the amount of iron is much too large for the constitution to take up, and it therefore disappears through the rectum. It is obtainable from Messrs. A. & M. Zimmermann, 3, Lloyd's Avenue, E.C.

Hetralin.—This remedy still continues to hold its place as one of the most valuable urinary antiseptics. It is rapid in its action, and has a powerful antiseptic action in alkaline fluids. It is prepared in tablets of 7½ gr. by Messrs. Chas. Zimmermann & Co., St. Mary-at-Hill, London, E.C.

Hypnogen is one of the best and least objectionable of hypnotics, and has proved most useful in cases of neurasthenia, melancholia, and dementia. It is put up in 5-gr. palatinoids by Messrs. Oppenheimer, Son & Co., Ltd.

Iodalbin.—Iodalbin is an iodo-proteid compound containing 21·5 per cent of iodine. It is in the form of an almost tasteless powder, insoluble in water, acids, or alcohol, but readily soluble in alkaline solutions. When administered it passes unchanged through the stomach and is gradually absorbed in the intestine, thus avoiding the gastric irritation that the alkaline iodides are liable to excite, and also ensuring a milder systemic effect. Experiments on animals show the presence of iodine in the saliva very shortly after its administration, but very little can be traced in the fæces. Several months of close clinical observation demonstrate that iodalbin produces the typical alterative effect of the inorganic iodides without their disadvantages. Iodalbin may therefore be advantageously prescribed in preference to the alkaline iodides in all cases where such treatment is indicated. A smaller dose, 5 to 10 gr., is sufficient, though many patients have taken as much as 60 gr. per diem without untoward effects. Messrs. Parke, Davis & Co. are the manufacturers.

Liquid Peptone.—A palatable, nutritious restorative, presenting prime beef reduced to bitterless peptone by means of bromelin—the proteid-digesting ferment of pine-apple juice—in association with extract of malt of high diastasic power. The combination is a true food in an easily assimilable form, allied with gently stimulating properties. In critical illnesses it may be relied upon to maintain nutrition for days, and in tuberculosis, anæmia, marasmus, and convalescence from debilitating diseases it is a valuable means of promoting nutrition. The ordinary dose is from 1 to 2 tablespoonfuls. It is made by Messrs. Parke, Davis & Co., who also supply it combined with 1¼ min. creosote, and ¾ min. guaiacol to the fluid ounce, for use in gastric disorders and summer diarrhœa.

Lotio Nigra.—Messrs. Burroughs, Wellcome & Co. have a "soloid" which, when powdered and shaken with one fluid ounce of water, makes a lotion corresponding in strength of active ingredient to lotio hydrarg. nigra, B.P. The official preparation may be more closely approximated by the addition of 24 min. of glycerin to the fluid ounce

Lotoids.—Messrs. Ferris & Co., Ltd., have given this name to compressed tablets intended for making lotions and douches. Thus they have a vaginal douche "lotoid" containing 30 grains each of sulphide of zinc and alum, which is sufficient to make a pint of lotion. This is a very convenient way of presenting vaginal douches, as the exact strength is measured.

Malt, Dry Extract of.—Dr. Wander, by producing a dry crystalline extract of malt, has done much to render the use of this ferment more popular and palatable. It has the advantage of not undergoing chemical change or fermentation when kept for any time. Instead of the sticky, glutinous extract, which was difficult to administer, we have a bright crystalline material for which children crave, and which they will take in place of sugar. It represents malt in a very concentrated form and absolutely pure, and is economical in use. Dr. Wander has gone further than this, by presenting us with a means of administering a number of medicines in a very palatable form; thus he has a preparation of his dry extract of malt with 5 gr. of Iodide of Iron to the ounce. Could there be anything better for a case of rheumatoid arthritis or of strumous disease? He has also a preparation containing the glycerophosphates of calcium, sodium, iron, and magnesium. This is an excellent substitute for tea and coffee for the neurasthenic patient. Another contains 5 gr. of pyrophosphate of iron to the ounce—a capital line of treatment for anæmic patients. Another, 5 gr. of calcium phosphate to the ounce—this is an excellent suggestion for scrofula and rickets. Dr. Wander's London office is 1–3, Leonard Street, City Road, E.C.

Mammary Gland.—Messrs. Oppenheimer, Son, & Co., Ltd., have made a reliable preparation of the fresh gland in the form of a palatinoid, 5 gr., to facilitate its use in uterine and ovarian diseases. In the *Medical Times and Hospital Gazette*, May 4th, 1907, Dr. Robert Bell refers to the successful treatment of fibromyoma of the uterus with the palatinoids, which, he states, he has employed extensively in the treatment of these tumours and also in metrorrhagia from other causes, "with most satisfactory results," and quotes a specific case where "an oval-shaped myoma occupied the left half of the uterus, which compressed the ovary on that side against the pelvis, with the result that atrophy of the left mamma ensued. Mammary Palatinoids were prescribed—one, four times a day—and within four months the fibroid had completely disappeared, while the mamma resumed its normal condition. In another case a persistent menorrhagia, under treatment by a well-known gynæcologist without benefit, was stated to be due to inoperable causes. The case, however, was only one of uterine fibroid, from which she rapidly recovered under treatment by Mammary Palatinoids. Since then she has been round the world, and is now in the best of health."

Membroids.—To pass a drug through the stomach unchanged, so that it only produces its action when in the intestinal canal, has been the subject of many experiments. Keratin is not altogether satisfactory. We are not sure whether compressed tablets made with talc do not have this effect without the intention of either the physician or the chemist! But to have something which we are quite sure will dissolve or not dissolve in the stomach, is what we all require. Messrs. Evans, Sons, Lescher & Webb, Ltd., 60, Bartholomew Close, E.C., believe that they have solved the problem of passing a drug through the stomach unchanged, by enclosing it in a small sac made of two layers of membrane. To these sacs they have given the name of "*Membroids*," and they are well entitled to the name, as representing an entirely new pharmaceutical method. They send us samples of Membroids of quinine containing 5 gr., and of cascara and belladonna, each containing 30 min. of cascara sagrada (fluid extract) with $\frac{1}{4}$ gr. of extract of belladonna. They also prepare Membroids of aspirin, blaud, creosote, copaiba, guaiacol, filix mas, santol, etc., and would no doubt prepare any other drug or combination to order. This represents a distinct advance in pharmacy.

Menthaform.—This is composed of formaldehyde, menthol, sugar of milk, and aromatics. It is a pleasant and most efficient antiseptic and disinfectant for the mouth and throat, and being non-poisonous may be used in all cases of tonsillitis and stomatitis when oral antisepsis is necessary. It is made in the form of tablets by Messrs. Ferris & Co., Ltd., of Bristol.

Metramine.—This is an invaluable urinary antiseptic. It has also yielded excellent results in typhoid bacilluria, as well as in cystitis with ammoniacal urine. It is prepared in palatinoids, gr. 5, by Oppenheimer, Son & Co., Ltd., and three of these during the day are sufficient. The same firm also put up a palatinoid, in which metramine is combined with methylene blue, ol. santali, and ol. copaibæ. This has been found useful in chronic gonorrhœa, gleet, etc., when there are irritative conditions present.

Mist. Cardam Co.—This is a palatable compound, possessing a warm aromatic flavour, and may be used with great advantage in disguising nauseous mixtures. It is also highly recommended as a carminative for alleviating the spasms and colic of infants, so often produced by improper feeding. Messrs. Reynolds & Branson, Ltd., Leeds.

Mist. Cinch. Acid. Conc. (1–7).—In this mixture we have an excellent means of administering a preparation of cinchona, having its bitter taste well covered with pleasant flavouring agents. It is highly concentrated, and retains its properties almost indefinitely, and for this reason it should form a valuable addition to the stock mixtures in common use. Messrs. Reynolds & Branson, Ltd., Leeds.

Mist. Neuro Co.—This is intended as a remedy for low febrile conditions, and as a nerve tonic. It appears particularly suited for cases where a tonic as well as an antipyretic is needed. Each drachm contains quinine, tinct. nuc. vom., caffein, phenazonum, tinct. gelsem., pot. brom., and elixir aurant. It is manufactured by Messrs. C. J. Hewlett & Son, 35–42, Charlotte Street, E.C.

Mist. Verbasci Co. c. Codeina.—The great mullein (*Verbascum thapsus*) has been much used on the Continent as a remedy for incipient phthisis, and the combination with wild cherry bark (*Prunus virginiana*) and squill with codeine has proved most useful in controlling the distressing cough of phthisical patients. Each fluid drachm contains $\frac{1}{4}$ gr. codeine. The dose is one drachm diluted. It is prepared by Messrs. C. J. Hewlett & Son, 35–42, Charlotte Street, E.C.

Mustard Bran.—We doubt whether this valuable material is often in the mind of the practitioner when he hesitates between the use of a linseed poultice or a mustard plaister. Mustard bran absorbs more water than linseed and, therefore, retains its heat longer. It never turns rancid, even if kept in stock for a long while. Its mild counter-irritant effect prevents the poultice feeling clammy as the heat evaporates. As regards the making of a poultice, the usual directions are not very practical, and the simplest thing to do is to put about equal quantities of bran and water into a saucepan and heat, removing just before it comes to the boil. The "linseed poultice" is no longer officinal, but we shall be sorry to be without the mustard bran poultice.

Mustard Oil is another application of mustard, very valuable in rheumatism, and as a general rubefacient. To obtain its best results, the part should be well sponged with very hot water, quickly dried with a warm towel, and the mustard oil rubbed in. Both these preparations are made by Messrs. J. & J. Colman, Ltd., Carrow Works, Norwich. In prescribing "Mustard Oil" for rubefacient purposes it is best to order "Colman's," because otherwise the essential oil of mustard may be dispensed. This mistake has occurred within our knowledge.

Nervitone Tablet.—Under this name Messrs. Warner & Co. produce a tablet containing phosph. $\frac{1}{100}$ gr., ferri carb. 1 gr., asafœtida $\frac{1}{2}$ gr., ext. sumbul $\frac{1}{2}$ gr., ext. nucis vom. $\frac{1}{10}$ gr. These can be obtained from Messrs. F. Newbery & Sons, Ltd., 27 & 28, Charterhouse Square, E.C. They are much appreciated in America by nervous patients.

Ottoform.—This is an excellent substitute for iodoform, because it occurs in the form of an impalpable powder. It is a tri-bromo-phenol compound, and, while preserving high bactericidal properties, is quite unirritating. It is prepared by Messrs. Chas. Zimmermann & Co., 9 & 10, St. Mary-at-Hill, London, E.C.

Ovaltine is a distinctly valuable product, both for use as an ordinary food, and for the treatment of debility. It is composed of malt extract, fresh eggs, milk, and converted cocoa, and contains organic phosphorus (Lecithin). Dr. A. Wander, of Berne, who is the manufacturer, proposes that it shall be used instead of tea and coffee, and thus form a restorative to the nervous system and an aid to digestion. Ovaltine appears as a crystalline powder with a very palatable taste, and we think that it would be of decided benefit if this were used by those patients who soon flag after tea, and for whom it is difficult to find a substitute. This is obviously not the limit of its uses. When given in warm milk (it must not be boiled) it forms as good an invalid food as it is possible to obtain, and infinitely more palatable. We believe that there is a great feature for Ovaltine. Dr. Wander's London office is 1–3, Leonard Street, City Road, E.C.

Perborol Ointment.—A soothing prophylactic cream, containing a powerful non-irritating antiseptic and deodorant, which acts by liberating nascent oxygen in the presence of moisture, forming hydrogen peroxide. It is absolutely unirritating to the most sensitive surface. A valuable dressing in obstetrics and general surgery, useful for anointing surgical instruments, also as an application in skin diseases due to pathological organisms, and in all cases where an antiseptic oxidizing agent is indicated. It is prepared by Messrs. Oppenheimer, Son & Co., Ltd.

Pilewort Ointment and Suppositories.—This is ung. ranunculi ficariæ, recommended by Sir James Sawyer as a local application for hæmorrhoids. It is manufactured by Messrs. Ferris & Co., Ltd., of Bristol, who also supply it in the form of suppositories.

Pine Tar Compound.—Messrs. Burroughs, Wellcome & Co. have produced a pleasantly flavoured fluid preparation containing pinol, tar, terpin hydrate, Virginian prune, balsam of Tolu, and ipecacuanha. This combination is very effective in the treatment of affections of the respiratory organs, as its active components are excreted by the lungs, and thus exert a slow, steady, and continuous action. It allays pulmonary irritation, and is of special service in chronic bronchitis and bronchorrhœa. It soothes and relieves coughs, and may be used in cases in which the administration of preparations of opium is inadvisable.

Quinine Ammoniate Elixir (Stephenson).—This is of the same strength as the B.P. tincture, but flavoured with Tangerine orange and sweetened ; it makes a pleasant-looking and clear solution with water, and is palatable to the taste. We always welcome these improvements of the pharmaceutical art. We think physicians would do well to ask their chemists to stock the preparation. It is made by Mr. Thos. Stephenson, F.C.S., 137, George Street, Edinburgh.

Saline Laxative, Effervescent.—This is supplied in granular form by Messrs. Parke, Davis & Co. Each drachm contains 10 gr. sodium sulphate, 20 gr. sodium phosphate, and 25 gr. magnesium sulphate, combined with an effervescent base which produces a sparkling draught and to a great extent conceals the natural unpleasantness of the salines.

Sapoform.—This is a saponaceous solution of formaldehyde which, being non-corrosive, is very useful for sterilizing instruments. It is also useful in $\frac{1}{2}$ per cent solution as a mouth wash. It is prepared by Messrs. Ferris & Co., Ltd., Bristol.

Silcasine.—A silicate paste containing boric acid, ammonium iodide, thymol, menthol, etc. This makes an efficient substitute for the old-fashioned poultice. It is antiseptic, aseptic, alterative, and non-greasy ; it reduces swelling, and abstracts moisture from the tissues. It is made by Messrs. Reynolds & Branson, of Leeds.

Somatose.—The Bayer Co., Ltd., 19, Dunstan's Hill, E.C., have recently introduced this in a liquid form, and it may be obtained either sweetened or unsweetened. It is very palatable, and possessing as it does the proteids and albumin in an alkaline form, it is rapidly combined with the tissue, and acts quickly upon nutrition.

Standardized Tincture.—Messrs. R. Sumner & Co., Ltd., of Liverpool, supply tinctures of digitalis and strophanthus which have been physiologically tested on the isolated heart of a rabbit by Prof. Sherrington, this method being more reliable than when the effect is measured by the lethal dose on a frog.

Syr. Bromoform Co.—In this preparation bromoform is so incorporated that it renders the dispensing of this drug comparatively easy and unattended by the risk consequent on its high specific gravity and difficulty in suspending. As a remedy for whooping-cough in children it will be found very valuable. Each fluid drachm contains : Bromoform $\frac{1}{12}$ min., tinct. aconit. $\frac{1}{12}$ min., codeine $\frac{1}{48}$ gr., with suitable demulcents. It is prepared by Messrs. Reynolds & Branson, Ltd., of Leeds.

Tinctures, " Probat."—This word is added after the names of tinctures which have been tested physiologically, the result of the test being stated upon a certificate attached to each bottle. Digitalis and strophanthus are two tinctures to which Messrs. Ferris & Co., Ltd., apply the word " Probat," for the reason stated.

Tono-Sumbul.—This is a very palatable tonic for nervous patients, and appears to have both a strengthening and soothing effect upon the heart. It is prepared by Messrs. Warner & Co., the agents being Messrs. F. Newbery & Sons, Ltd., 27 & 28, Charterhouse Square, London, E.C.

Tuberculin Test.—This test, prepared by the Pasteur Institute of Lille, claims to be diagnostic of tuberculosis in man. Should this be the case, its value to the profession would be incalculable. All that is necessary is to allow one or two drops of tuberculin to fall on the conjunctiva near the inner angle of one eye. In non-tuberculous subjects this produces no result, but if the patient has a trace of tubercle the eye will commence to redden from the third hour ; after six hours the caruncle begins to swell and the eye becomes covered with exudation. The condition clears up in two or three days. We deal with this subject more fully, including coloured illustrations of the reaction, on another page. (*See* TUBERCULOSIS, DIAGNOSIS OF.) Messrs. R. Sumner & Co., Ltd., of Liverpool supply this agent in a convenient form for use. A tube sufficient for two or three tests costs only 1/6. There has been a great demand for it, and its value is likely to be quickly ascertained.

Yeast.—During the past twenty years we have regularly prescribed beer yeast in cases of boils, carbuncles, and chronic eruptions, and have regretted the absence of any suitable pharmaceutical preparation. We are glad to find that Messrs. Ferris & Co., Ltd., of Bristol, are preparing yeast in 5-gr. tablets, which are not only convenient, but a palatable way of using this ferment.

Prof. Roos, of Freiburg, considers that the good effects obtained from yeast in the treatment of boils, acne, etc., is due to its fatty substance, "ceridine," and appears to consider that the zymones and fermentation constituents are rather injurious than otherwise. Clinical experience appears to bear out Prof. Roos' conclusion, and excellent results have been obtained from the use of ceridine, which Messrs. R. Sumner & Co. prepare both in the form of capsules and pessaries. Theoretically we are not convinced that the highly ionized physical state in which yeast exists is not an essential factor in its curative results. We have reached a stage when we have to consider the physical state of a medicament as well as its chemical constituents. Still, as good results have been obtained, we think ceridine deserves a trial.

BOOKS OF THE YEAR.

A List of the Principal Medical Works and New Editions Published during 1907.

⁂ *For the convenience of our readers any of the works in this list can be obtained from Messrs. John Wright & Co., "Medical Annual" Offices, Bristol.*

AMBULANCE AND NURSING.

Antiseptic Methods for Surgical Nurses and Dressers. By Harold Upcott. Cr. 8vo, pp. 60. *Baillière* - - - - - - *Net 2s. 6d.*

Care and Nursing of the Insane. By Percy J. Baily. Part I.—Anatomy and Physiology Cr. 8vo, pp. 102. *Scientific Press* - - *Limp, Net 1s.*

Fever Nursing. By J. C. Wilson, M.D. 4th ed. 12mo, pp. 241. *Lippincott* - - - - - - - - - - - 5*s.*

First Aid to the Injured. Six Ambulance Lectures. By Friedrich Esmarch. 7th and enlarged ed. With additional Illustrations. Cr. 8vo, pp. 154. *Smith, Elder* - - - - - - - - - *Net 2s.*

"First Aid" to the Injured and Sick: An Advanced Ambulance Handbook. By F. J. Warwick, B.A., M.B., and A. C. Tunstall, M.D., F.R.C.S. (Edin.). 5th ed. 30th thousand. 234 Illustrations. Carefully revised and with some additional Drawings. *J. Wright & Co.*
Paper, net, 1s.; Limp Cloth, with flap for pocket, net, 2s. 6d.

Home Nursing: Notes on. By Mabel D. Goldie. 2nd and revised ed. 18mo, pp. 134. *Baillière* - - - - - - - - *Net 1s. 6d.*

Hospital Nurses: Manual for. By Edward J. Domville. 9th ed. 16mo, pp. 160. *Churchill* - - - - - - - - *Net 1s. 6d.*

Invalid and Convalescent Cookery. By Mary E. Birt. *J. Wright & Co.* *Net 6d.*

Manual for Nurses on Abdominal Surgery. By Harold Burrows. Cr. 8vo, pp. 150. *Scientific Press* - - - - - - - *Net 2s. 6d.*

Manual of Nursing: Medical and Surgical. By Laurence Humphry. 30th ed. Cr. 8vo, pp. 268. *Griffin* - - - - - - 3*s.* 6*d.*

Mental and Sick Nursing: Text-book of. Adapted for Medical Officers and Nurses in Private and Public Asylums. By Robert Jones. Cr. 8vo, pp. 242. *Scientific Press* - - - - - - - - *Net 3s. 6d.*

Modern Nursing in Hospital and Home. A Short Course of Lectures to Probationers. By E. C. Laurence. Cr. 8vo, pp. 198. *Scientific Press* *Net 2s. 6d.*

Nursing: General, Medical, and Surgical. With Appendix on Sick-Room Cookery. By Wilfred J. Hadley. 2nd ed. Cr. 8vo, pp. 380. *Churchill* - - - - - - - - - - - - *Net 3s. 6d.*

Nursing Times, The. Vol. II. January–December, 1906. 4to. *Macmillan* *Net 6s.*

Practical Fever Nursing. By E. Register, M.D. *Saunders* *Net 12s.*

Practical Nursing. Text-Book for Nurses, etc. By Anna C. Maxwell and Amy E. Pope. Cr. 8vo, pp. 538. *Putnam* - - - - *Net 6s.*

Primary Nursing Technique for First-Year Pupil Nurses. By Isabel McIsaac. Cr. 8vo, pp. 218. *Macmillan* - - - - - *Net 3s.*

Sick Nursing. "Temple Cyclopædic Primers." By H. Drinkwater. 12mo, pp. 146. *Dent* - - - - - - - - *Net 1s.*

ANATOMY AND PHYSIOLOGY.

Aids to Pathology. By Harry Campbell. 12mo. *Baillière* *Net 3s. 6d.*

Anatomical Terminology. By L. F. Barker, M.D. Illustrated. *Churchill.* *Net 5s.*

Anatomy for Nurses: Text-book of. By E. R. Bundy. Illustrated. 8vo. *Churchill* - - - - - - - - - - *Net 7s. 6d.*

Atlas and Text Book of Anatomy. By Sobotta and McMurrich. Vol. XI. *Saunders* - - - - - - - - - - *Net 25s.*

Atlas of Human Anatomy. By W. Spulteholz. Ed. and translated by L. F. Barker, M.B. 2nd ed. *Lippincott* - - - *Net. 42s.*

Clinical Anatomy: Text Book of. By D. N. Eisendrath, M.D. 2nd ed. *Saunders* - - - - - - - - - *Net 21s.*

Embryology: Text Book of. By J. C. Heisler, M.D. Illustrated. 3rd ed. revised. 8vo. *Saunders* - - - - - - - *Net 13s.*

Essentials of Histology: Descriptive and Practical. For the Use of Students. By E. A. Schäfer. 7th ed. 8vo, pp. 520. *Longmans* *Net 10s. 6d.*

Human Anatomy. By T. Dwight and others. Edited by G. A. Piersol. Roy. 8vo. *Lippincott* - - - - - - - *Net 30s.*

Human Anatomy, Morris's. A Complete Systematic Treatise by English and American Authors. Edited by Hervey Morris and J. Playfair McMurrich. 4th ed., revised and enlarged. Roy. 8vo, pp. 1550. *Churchill* *Net 30s.*

Human Blood-Vessels. By A. V. Meigs, M.D. 8vo, pp. 140, 59 Plates. *Lippincott* - - - - - - - - - *Net 21s.*

Human Physiology: Elements of. By Ernest H. Starling. 8th ed. 8vo. pp. 724. *Churchill* - - - - - - - - *Net 12s. 6d.*

Human Physiology: Essentials of. By D. Nöel Paton. 3rd ed., revised and enlarged. 8vo, pp. 494. *W. Green* - - - - - *Net 12s.*

Manual of Anatomy. Systematic and Practical, including Embryology. Vol. I.—Osteology, Upper and Lower Limbs, pp. 612, 268 Illus. Vol. II.—Abdomen: Thorax: Head, Nervous System. Organs of Special Sense. and Appendix. Pp. 982. 363 Illus. By A. M. Buchanan. Each *net 12s. 6d.* or in 1 vol. *Baillière* - - - - - - - *Net 21s.*

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BACTERIOLOGICAL EXAMINATION OF DISINFECTANTS. By William Partridge. Cr. 8vo, pp. 66. *Sanitary Pub. Co.* - - - - - - *Net* 2*s.* 6*d.*

LABORATORY HANDBOOK OF BACTERIOLOGY. (Abel's). Translated from the 10th German ed, by M. H. Gordon. 12mo, pp. 236. *H. Frowde* *Net* 5*s.*

MANUAL OF BACTERIOLOGY. By Robert Muir and James Ritchie. 4th ed. Cr. 8vo, pp. 630. 171 Illustrations. *Pentland* - - *Net* 10*s.* 6*d.*

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County Asylum, Mickleover, Res. Med. Supt., R. Legge, M.D. Access—Derby, M.R. 5 miles ; Mickleover, G.N.R. 2 miles.

Devizes.—*Wilts County Asylum.* Res. Med. Supt., J. I. Bowes, M.R.C.S. Access—Devizes, 1 mile.

Dorchester.—*The County Asylum, "Herrison."* Med. Supt., P. W. Macdonald, M.D. Access—Dorchester, 3 miles.

Downpatrick.—*District Asylum* (for 800 patients). Res. Med. Supt., M. J. Nolan, L.R.C.P.I. & L.M. Access—Downpatrick, 1 mile.

Drumcondra (Co. Dublin).—*Hartfield House.* Med. Prop., Dr. F. E. Lynch. Vis. Phys., Dr. Matthew Burke Savage. Access—Dublin, 2 miles.

Dublin.—*Bloomfield,* Morehampton Road. Med. Officer, H. T. Bewley, M.D. Access—Dublin, 1 mile.

Farnham House and Maryville, Finglas (for 56 patients, both sexes). Prop. and Res. Med. Supt., W. R. Dawson, M.D. Access—Cab from Dublin, 3 miles.

Consulting Rooms, 41, Upper Fitzwilliam Street, Dublin. Telephone No. 1470.

Highfield (for ladies), Drumcondra. *Hampstead* (for gentlemen). Glasnevin. Res. Med. Supts., Hy. M. Eustace, B.A., M.D., and Dr. Wm. N. Eustace. Access—By rail, Dublin. *See also p.* 824

House of St. John of God, Stillorgan. Res. Phys., Dr. P. O'Connell. Access—Stillorgan station, ½ mile; Dublin, 5 miles.

Richmond District Asylum. Res. Med. Supt., Dr. C. Norman.

St. Patrick's Hospital, James Street. Res. Med. Supt., Dr. R. R. Leeper. Branch Asylum at Lucan. Asst. Med. Off., Dr. H. R. C. Rutherford.

St. Vincent's Asylum, Fairview. Vis. Med. Supts., Sir Francis R. Cruise, D.L., M.D., and John Murphy, F.R.C.P.I. Apply to the Superioress.

Stewart Institution, Palmerston, Chapelizod. Res. Med. Supt., F. E. Rainsford, M.D. Access—Kingsbridge station, 2½ miles.

Verville, Clontarf, near Dublin. Med. Prop., Dr. F. E. Lynch. Vis. Phys., Dr. M. B. Savage. Access—Dublin.

Woodbine Lodge, Rathfarnham, 6 miles (ladies). Prop., Mrs. Bishop. Med. Supt., Dr. A. Croly. Access—Rathfarnham tram, 2 miles.

Dudley (Stafford).—*Ashwood House,* Kingswinford. Props. Drs. Peacock and Pietersen. Res. Med. Supt., Dr. Pietersen. Access—Stourbridge Junc. 3½ miles, Dudley station, 4 miles; Wolverhampton, 7 miles. *See also p.* 838

Dumfries.—*Crichton Royal Institution.* Med. Supt., Dr. C. C. Easterbrook. Access—Dumfries, 1 mile.

Dundee.—*Royal Asylum and District Asylum* Liff. Res. Med. Supt., W. Tuach-Mackenzie, M.D. Access—Dundee, 3 miles; Liff, 1½ miles.

Durham.—*County Asylum,* Winterton. Res. Med. Supt., Dr. W. St. J. Skeen, M.B. Access—Sedgefield station, 3 miles, by 'bus.

Earlswood.—*Training Home for the Feeble-minded and Imbecile.* Res. Med. Supt., Dr. Charles Caldecott. Sec., H. Howard, 36 King William St., E.C. Access—Earlswood station or Red Hill Junc., 1½ miles.

Edinburgh.—*Midlothian and Peebles District Asylum* (Patients, 350). Res. Med. Supt., R. B. Mitchell, M.D. Access—Rosslynlee station, 1 mile.

Royal Edinburgh Asylum, Morningside. Res. Phys. Supt., T. S. Clouston, M.D., LL.D. Access—Edinburgh, 1½ miles.

New Saughton Hall, Polton. Med. Supt. J. B. Tuke, M.D. Access—Princes Street station, 20 minutes.

Elgin.—*District Asylum.* Res. Supt., Alexander Hendry. Vis. Med. Off., Dr. D. G. Campbell. Access—Elgin, 1¼ mile.

Ennis.—*District Asylum.* Res. Med. Supt., Dr. F. O'Mara. Access—Ennis station, 2 miles.

Enniscorthy (Co. Wexford).—*District Lunatic Asylum.* Res. Med. Supt., Thos. Drapes, M.B. Access—Enniscorthy, 1 mile.

Epsom (Surrey).—*The Silver Birches,* Church Street (for ladies). Res. Licensee, Miss Daniel. Co-Licensee, Dr. E. C. Daniel. Access—L. & S.W.R., and L.B.S.C.R., 5 minutes. *See also p.* 829

Exeter.—*City Asylum,* Heavitree. Res. Med. Supt., R. L. Rutherford, M.D. Access—Exeter, 4 miles.

Court Hall, Kenton, near Exeter. Res. Licensees, Miss Mules, M.B., B.S., and Miss A. S. Mules. Vis. Phys., Dr. Lovely. Access—Starcross, 1 mile.

Devon County Asylum, Exminster. Med. Supt., Dr. Arthur N. Davis. Access — Exminster, 1¼ miles; Exeter, 4 miles.

Wonford House (Hospital for the Insane). Res. Med. Supt., P. Maury Deas, M.B., M.S. Lond. Access—Exeter station (Queen Street) 1½ miles; (St. David's), 2 miles. *See also p.* 837

Fairford (Gloucestershire).—*Fairford Retreat.* Res. Med. Prop., Dr. A. C. King-Turner. Access—Fairford.

Glasgow.—*District Asylum*, Woodilee. Med. Supt., Hamilton C. Marr, M.D. Access—Lenzie station, 1 mile; Glasgow, 8 miles.

District Asylum and Hospital for Mental Diseases, Gartloch. Res. Med. Supt., W. A. Parker, M.B. Access—Garnkirk station, 1 mile.

Govan District Asylum, Hawkhead. Res. Med. Supt., Dr. W. R. Watson. Access—Crookston station.

Kirklands Asylum, Bothwell. Res. Med. Supt., James H. Skeen, M.B. Access—Bothwell and Fallside stations, ½ mile; Glasgow, 9 miles.

Lanark County Asylum. Med. Supt., Dr. N. T. Kerr. Access—Hartwood, 5 minutes.

Royal Asylum, Gartnavel. Res. Phys. Supt., Landel R. Oswald, M.B. Private patients only.

Smithston Asylum, Greenock. Med. Off., Jas. Laurie, M.B. Access—Greenock, about 1½ miles.

Gloucester.—*Barnwood House.* Res. Med. Supt., J. G. Soutar, M.B., C.M. Access—Gloucester, 2 miles. *See also p.* 836

Gloucester County Asylums, Wotton and Barnwood, Gloucester. Res. Med. Supt., E. W. Henley, M.R.C.S. Access—Gloucester station, 1 mile.

Great Yarmouth.—*Royal Naval Hospital.* Fleet Surgeon in charge. Access—Great Yarmouth station, 1 mile. For Naval patients only, admitted by Admiralty order.

Guernsey.—*St. Peter Port Asylum.* Med. Off., E. K. Corbin, M.R.C.S.

Haddington.—*District Asylum*, 17 miles from Edinburgh. Med. Supt., J. Bruce-Ronaldson, M.D. Access—Haddington station, 10 minutes.

Hatton (near Warwick). — *County Asylum.* Res. Med. Supt., A. Miller, M.B. Access—Hatton station, 2 miles; Warwick, 3 miles.

Hayward's Heath.—*Brighton County Borough Asylum.* Res. Med. Supt., Edward B. C. Walker, M.D. Access—Hayward's Heath, 1½ miles.

Hellingly.—*East Sussex County Asylum.* Res. Med. Supt., F. R. P. Taylor, M.D. *See also p.* 824

Henley-in-Arden (Warwickshire).—*Glendossil* (for both sexes). Res. Prop., Dr. S. H. Agar. Access—Henley-in-Arden, G.W.R., ¾ mile.

Hereford.—*County and City Asylum.* Res. Med. Supt., C. S. Morrison, L.R.C.P. Ed. Access—Barrs Court, Hereford, 3 miles.

Hitchin (Herts), near.—*Three Counties Asylum.* Res. Med. Supt., S. E. de Lisle, L.R.C.P.I. Access—Three Counties station, 1 mile.

Hull.—*City Asylum.* Res. Med. Supt., J. Merson, M.D. Access—Willerby station, 1 mile.

Inverness.—*District Asylum.* Med. Supt., R. B. Campbell, M.B. Access—Inverness, 2½ miles.

Ipswich.—*Borough Asylum.* Med. Supt., Dr. E. L. Rowe. Access—Ipswich, 2 miles.

Isle of Man.—*Lunatic Asylum*, Union Mills. Med. Supt., W. Richardson, M.D. Access—Douglas, 3 miles.

Isle of Wight.—*The County Asylum*, Carisbrooke. Res. Med. Supt., Harold Shaw, M.B. Access—Blackwater, ¾ mile; Newport, 2½ miles.

Isleworth (Middlesex).—*Wyke House.* Res. Prop., Dr. F. Murchison. Access — Isleworth, Brentford, Osterley station, 1 mile.

Ivybridge.—*Plymouth Borough Asylum.* Res. Med. Supt., W. H. Bowes, M.D. Access—Wrangaton G.W.R., 1½ miles; Ivybridge, 3 mls.

Jersey.—*Cranbourne Hall*, Grouville. Med. Supt., A. C. Stamberg, M.D. Access—Grouville, 2 mins. walk.

The Grove. Res. Med. Prop., F. N. Gaudin, M.R.C.S. 2½ miles from St. Heliers, 2 from St. Aubin's.

Jersey Asylum, St. Heliers. Res. Med. Supt., Julius Labey, M.R.C.S. Access—Gorey Village, 1 mile.

Kilkenny.—*District Asylum.* Res. Med. Supt., G. F. West, L.R.C.P. Access—Kilkenny station, ¼ mile.

Killarney.—*District Asylum.* Res. Med. Supt., E. W. Griffin, M.D. Asst. Med. Off., G. W. Downing, L.R.C.P. & S. Access—Killarney, ½ mile.

Kirkby Lonsdale.—*Greta Bank.* Res. Licensee, Mrs. Taylor. Access—Bentham (M.R.) 2 miles.

Kirkintilloch (near Glasgow).—*Westermains Private Asylum.* For ladies; quiet cases only received. Apply to Mr. Jas. Lawrie, Res. Proprietor. *See also p.* 837

Knowle (near Fareham).—*County Asylum.* Med. Supt., H. K. Abbott, M.D. Access—Knowle station, ⅛ mile.

Lancaster.—*County Asylum.* Res. Med. Supt., D. M. Cassidy, M.D. Access—Lancaster, L. & N.W. and Midland stations, each 1¼ miles.

Leeds (Menston, near).—*West Riding Asylum.* Res. Med. Supt., S. Edgerley, M.D. Access—Menston, 1 mile.

Leek (Stafford).—*County Asylum,* Cheddleton. Med. Supt., W. F. Menzies, M.D. Access — Wall Grange station, 1 mile.

Leicester.—*Borough Asylum,* Humberstone. Res. Med. Supt., J. E. M. Finch, M.D. Access—Leicester.

Leicestershire and Rutland Asylum. Res. Med. Supt., R. C. Stewart, M.R.C.S. Access—Narborough station, ¾ mile; Leicester, 7 miles.

Letterkenny.—*Donegal District Asylum.* Res. Med. Supt., E. E. Moore, M.D. Asst. Med. Off., J. C. Martin, L.R.C.S.I. Access—Letterkenny and Lough Swilley Rly., 1 mile.

Lichfield.—*County Lunatic Asylum,* Burntwood, near Lichfield. Res. Med. Supt., J. B. Spence, M.D. Access—Lichfield City, 3½ miles; Trent Valley, 4½ miles; Hammerwich, 1½ miles.

Limerick. — *District Asylum.* Res. Med. Supt., Dr. E. D. O'Neill. Access—Limerick station, ½ mile.

Lincoln.—*County Asylum,* Bracebridge. Res. Med. Supt., Dr. T. L. Johnston. Access—2½ miles from Lincoln G.N.R. station.

The Lawn. Res. Med. Supt., Arthur P. Russell, M.B. Access—Lincoln station, 1 mile. *See also p.* 829

Liverpool.—*Shaftesbury House,* Formby, near Liverpool and Southport. Res. Med. Supt., Stanley A. Gill, B.A., M.D. Access—Formby station, ¼ mile distant. *See also p.* 828

Tue Brook Villa, Liverpool, E. Res. Med. Supt., Dr. J. A. Cooke. (For 52 males and females). Access—Tue Brook station or Green Lane car. *See also p.* 824

London.—*Bethlem Royal Hospital,* St. George's Road, London, S.E. Res. Med. Supt., Theo. B. Hyslop, M.D., M.R.C.P.E. *See also p.* 835

Bethnall House, Cambridge Road, N.E. Res. Med. Supt., J. K. Will, M.D. Access—Cambridge Heath station.

Brooke House, Clapton, N.E. Props., Mr. H. T. Monro and Dr. J. O. Adams. Res. Med. Supt., Dr. Gerald Johnston. Access—Clapton, G.E.R.

Camberwell House, Peckham Road, S.E. Res. Med. Supt., F. H. Edwards, M.D., M.R.C.P. Asst. Med. Offs., G. H. Keene, B.A., M.D., B.Ch., and G. A. Fleming, L.R.C.S. & P. Telegrams, "Psycholia, London." *See also p.* 836

Chiswick House, Chiswick. Res. Lics., Dr. T. S. Tuke; Med. Supt., C. M. Tuke, M.R.C.S. Access—Chiswick station, ½ mile; Turnham Green station, 1 mile.

Clarence Lodge, Clapham Park, S.W. Lic., Miss F. Leech, B.A. Med. Off., Dr. G. F. Blandford. Access: Clapham Rd., and Clapham Common (Electric), 15 minutes. *See also p.* 834

Featherstone Hall, Southall. Res. Med. Lic., Dr. W. H. Bailey. Access—Southall station, 5 minutes.

Fenstanton, Christchurch Road, Streatham Hill. Res. Med. Supt., T. Duncan Greenlees, M.D., F.R.S. Edin. Access—Tulse Hill, 5 minutes, and Herne Hill, 15 minutes. *See also p.* 834

Flower House, Catford, S.E. Res. Med. Supt., C. A. Mercier, M.D. Access—C. & D. R. Beckenham Hill, 5 minutes.

Halliford House, Sunbury-on-Thames, S.W. Res. Med. Supt., W. J. H. Haslett, M.R.C.S. Access—Sunbury station, 1¼ mile.

Hayes Park, Hayes, Middlesex, near Uxbridge. Res. Med. Off., Dr. J. W. Higginson. Access—Hayes, 2 miles.

Hendon Grove Asylum (for ladies), Hendon. Med. Lic., F. W. Edridge-Green, M.D., F.R.C.S. Access—By M.R., Hendon station, ½ mile, or 'bus from Tube at Golder's Green.

London County Asylum, Banstead Downs, near Sutton, Surrey. Res. Med. Supt., D. J. Jones, M.D. Access—Belmont station, ½ mile; Sutton station, 1½ miles.

London County Asylum, Bexley, Kent. Res. Med. Supt., T. E. K. Stansfield, M.B. Access—Bexley station, 1¼ miles.

London County Asylum, Cane Hill, Coulsdon, Surrey. Res. Med. Supt., Dr. J. M. Moody. Access—Coulsdon, S.E.R., or Stoat's Nest, L.B. & S.C.R., 10 minutes.

London County Asylum, Claybury, Woodford, Essex. Res. Med. Supt., Robert Jones, M.D. Access—Woodford, 1½ miles.

London County Asylum, Colney Hatch, N. Res. Med. Supt., W. J. Seward, M.B. Access—New Southgate, G.N.R.

London County Asylum, Hanwell. Res. Med. Supt., Dr. P. J. Baily.

London County Asylum, Horton, Epsom. Res. Med. Supt., Dr. J. R. Lord. Access—L. & S.W. Rly. 1¾ miles.

Middlesex County Asylum, Tooting, S.W. Med. Supt., H. Gardiner Hill, M.R.C.S. Access—Wandsworth Common station, 1 mile.

Moorcroft House, Hillingdon (males). Uxbridge, 2 miles; London, 13 miles. Med. Licensees, Dr. R. J. Stilwell, and Dr. R. H. Cole. Access—West Drayton station, 2 miles.

Newlands House, Tooting Bec Road, S.W. (for gentlemen). Lic. Prop., A. H. Sutherland. Med. Supt., H. J. Hind, M.R.C.S. Access—Balham station, 1 mile, and tram. *See also p.* 834

Northumberland House, Green Lanes, N. Prop., A. H. Stocker, M.D. Res. Med. Supt., Dr. Frank R. King. Access—Finsbury Park station, 1 mile. *See also p.* 838

Otto House, 47, North End Road, West Kensington (for ladies). Lic. Prop., A. H. Sutherland. Lady Supt., Mrs. Chapman. Access—West Kensington station, 1 mile. *See also p.* 834

Peckham House, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Supt., Harold C. Halsted, M.D. Access—Peckham Rye sta., 10 minutes' walk. *See also p.* 834

St. Luke's Hospital, Old St., E.C. Res. Med. Supt., Wm. Rawes, M.D., F.R.C.S. Convenient to all principal London stations. *See also p.* 835

The Grange, East Finchley, N. Res. Licensees, Dr. F. and Mrs. Watson.

The Priory, Roehampton, S.W., near Richmond. Res. Med. Supt., James Chambers, M.D. Access—Barnes station, 10 minutes.

Vine Cottage, Norwood Green, Middlesex. Res. Med. Prop., H. C. Titterton, M.R.C.S. Access—Southall, 1 mile.

West Ham Boro' Asylum, Goodmayes, Ilford. Res. Med. Supt., Dr. D. Hunter. Access—Goodmayes, ¾ mile.

Wood End House, Hayes (ladies). Uxbridge, 3 miles; London, 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes station, 1 mile.

Londonderry.—*District Asylum*. Res. Med. Supt., Dr. Hetherington. Access—Londonderry, 1 mile.

Macclesfield.—*Parkside Asylum*. Res. Med. Supt., T. Steele Sheldon, M.B. Lond. Access—Macclesfield, 1 mile.

Maidstone.—*Kent County Asylum*. Res. Med. Supt., H. W. Lewis, M.D. Access—Maidstone, 1½ miles.

Malling Place and *Winthies Cottage* (for ladies), and *Castle House* (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

Market Lavington (Wilts).—*Fiddington House*. Prop., Major Reilly. Res. Med. Supt., Dr. J. Selfe Lush. Access—Lavington, 1½; Devizes, 6 miles.

Maryborough (Queen's County).—*Maryborough Asylum.* Res. Med. Supt., Dr. P. Coffey. Access—Maryborough, ½ mile.

Melrose, N.B. — *Roxburgh District Asylum.* Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile.

Melton. — *Suffolk District Asylum,* near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton station, 1¼ miles; Woodbridge station, 2¼ miles.

Middlesbro'.—*County Boro' Asylum.* Res. Med. Supt., Dr. J. W. Geddes. Access—Middlesbro', 2 miles.

Monaghan (Ireland).—*District Asylum.* Res. Med. Supt., R. L Donaldson, M.D. Access—Monaghan, ¼ mile.

Montrose, N.B. — *Montrose Royal Lunatic Asylum.* Phys. Supt., John G. Havelock, M.D. Access—Hillside, ¼ mile; Dubton, 1 mile.

Morpeth. — *Northumberland County Asylum.* Res. Med. Supt., Thos. W. McDowell, M.D. Access—Morpeth station, 1 mile, by 'bus.

Mullingar. — *District Asylum.* Res. Med. Supt., Dr. A. Finegan. Access—Mullingar station, 1 mile.

Nelson (Lancs.). — *Marsden Hall.* Res. Licensee, Mrs. Moor. Med. Supt., P. G. Mould, M.R.C.S. Access—Nelson stat., L. & Y. Rly.

Newcastle-on-Tyne.—*City Asylum,* Gosforth. Res. Med. Supt., James T. Callcott, M.D. Access—Newcastle, 4 miles.

Newton-le-Willows, near (Lanc.)—*Haydock Lodge Asylum.* Res. Med. Prop., Dr. C. T. Street. Access—Newton-le-Willows station, 2 miles.

Northampton.—*Berrywood Asylum.* Res. Med. Supt., W. Harding, M.D. Access—Castle station, 2½ miles; Midland station, 3 miles.

St. Andrew's Hospital. Med. Supt., J. Bayley, M.R.C.S. Access—Northampton station, 1 mile. *See also p.* 825

Norwich.—*Heigham Hall.* Res. Phys. and Prop., J. G. Gordon-Munn, M.D. Access—Victoria station, 1 mile; Thorpe station, 1½ miles.

Norfolk County Asylum, Thorpe (1000 beds). Res. Med. Supt., D. G. Thomson, M.D. Access—Whitlingham station, 1 mile; Norwich, 2½ miles.

Norwich City Asylum, Hellesdon, near Norwich. Res. Phys. and Supt., Dr. A. Sykes. Access—Hellesdon, 1 mile.

The Bethel Hospital for the Insane. Res. Med. Supt., J. Fielding, M.D. Cons. Phys., Saml. J. Barton, M.D. Access—Norwich (Thorpe) station, 1 mile. *See also p.* 832

The Grove, Old Catton, near Norwich.—(For ladies only.) Res. Med. Supt., C. A. Osburne, F.R.C.S. Apply to the Misses McLintock.

Nottingham.- *City Asylum,* Mapperley Hill. Med. Supt., E. Powell, M.R.C.S.

Notts County Asylum. Med. Supt., A. M. Jackson, M.D. Access—Radcliffe-on-Trent, 2 miles.

The Coppice. Res. Med. Supt., W. B. Tate, M.D. Access—Midland station, 2½ miles; Gt. Northern & Gt. Central station, 1½ miles.

Omagh.—*District Asylum.* Res. Med. Supt., Geo. E. Carre, M.B. Access—Omagh station, 1½ miles.

Oxford.—*Oxford County Asylum.* Res. Med. Supt., T. S. Good, M.R.C.S. Access—Littlemore station.

The Warneford, Oxford, 1½ miles. Res. Med. Supt., James Neil, M.D. Access—Oxford station, 2¼ miles. *See also p.* 839

Paisley. — *Parochial Asylum,* Craw Road. Vis. Med Off., T. Graham, M.D.; Res. Med. Off., Jessie G. Duncan, M.B., Ch.B. Access—Paisley, 1 mile.

Parochial Asylum, Riccartsbar. Med. Off., D. Fraser, M.D. Access—Paisley West, ¼ mile.

Perth.—*District Asylum,* Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.

James Murray's Royal Asylum, Perth (for private patients only). Phys. Supt., A. R. Urquhart, M.D., F.R.C.P. Ed. Access—Perth station, under 2 miles. *See also p.* 838

Plympton. — *Plympton House,* Plympton, South Devon. Res. Med. Supt., Dr. Alfred Turner. Access—Plympton, 1 mile; Marsh Mills, 2 miles; Plymouth, 5 miles. *See also p.* 836

Portsmouth.—*Borough Asylum.* Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton, 1½ miles.

Prestwich (nr. Manchester).—*County Asylum.* Res. Med. Supt., Dr. F. Perceval. Acc.—Prestwich, 1 mile.

Rainhill (near Liverpool).—*County Asylum.* Res. Med. Supt., J. Wiglesworth, M.D. Access—St. Helens, 2½ miles ; Rainhill, 1 mile.

Rotherham (Yorkshire).—*Thundercliffe Grange,* 5 miles from Sheffield (for ladies). Con. Phys., W. C. Clapham, M.D. Res. Phys., G. E. Mould, M.R.C.S., L.R.C.P. Access—Grange Lane station, ¼ mile.

See also p. 824

Salisbury.—*Fisherton House Asylum.* Med. Supt., Dr. J. L. Baskin. Access—Salisbury station, 5 mins.

See also p. 829

Laverstock House. Med. Supt., Hy. J. Manning, M.R.C.S. Access—Salisbury, 1½ miles.

Sevenoaks (Kent).—*Riverhead House* (for ladies). Res. Med. Supt., Dr. Wm. H. Macartney. Access—Sevenoaks station, S.E.R., ¾ mile.

Shrewsbury.—*Salop & Montgomery Counties Asylum.* Res. Med. Supt., D. F. Rambaut, M.D. Access—Shrewsbury station, 2½ miles.

Sleaford.—*Kesteven County Asylum.* Med. Supt., J. A. Ewan, M.D.

Sligo.—*District Asylum.*—Res. Med. Supt., Dr. Joseph Petit. Access—Sligo station, 1½ miles.

Stafford.—*County Asylum.* Res. Med. Supt., Dr. J. W. S Christie. Access—Stafford, 1 mile.

Institution for the Insane, Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Access—Stafford, 1 mile.

See also p. 831

Starcross (near Exeter).—*Western Counties Training Institution for the Feeble-minded.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes.

Stirling.—*District Asylum,* Larbert. Med. Supt., Dr. G. M. Robertson. Access—Larbert, 1½ miles.

St. Albans (Hill End).—*Herts County Asylum.* Med. Supt., A. N. Boycott, M.D. Access—Hill End station, G.N.R., 2 minutes.

St. Leonards-on-Sea.—*Ashbrook Hall,* Hollington (for ladies). Res. Props., Mrs. Hitch and Miss Adams. Med. Supt., Dr. E. Kaye Smith. Access—Warrior Square station, 2 miles.

Stone (near Aylesbury). — *Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.

Sutton (Surrey).—*Chalk Pit House* (for ladies). Prop., Mrs. F. D. Atkins. Med. Supt., Dr. Reichardt.

Tamworth (Staffs.).—*The Moat House* (for ladies). .Res Prop., E. Hollins, M.A. Access—Tamworth ¾ mile.

See also p. 826

Taunton.—*Somerset & Bath Asylum,* Cotford, near Taunton. Res. Med. Supt., Dr. H. T. S. Aveline. Access—Norton Fitzwarren station, 2 miles.

Ticehurst (Sussex).—*Asylum.* Props., Drs. H. & A. Newington. Access—Ticehurst Road 3 miles, Wadhurst S.E. & C.R., 4 miles.

Tonbridge. — *Redlands.* Res. Med. Supt., W. A. Harmer, L.S.A. Access—Tonbridge junc., S.E. & C.R., 2½ miles.

Virginia Water. — *Holloway Sanatorium,* Hospital for the Insane. St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Offs., T. E. Harper, L.R.C.P., G. W. Smith, M.B., C. E. C. Williams, M.B., Sheila M. Ross, M.D. Access—Virginia Water station, 5 mins. Seaside Branch, Hove Villa, Dyke Road, Brighton. Med. Off., E. Rivaz Hunt, M.D.

See also p. 837

Wadsley (near Sheffield). — *South Yorkshire Asylum.* Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 1 mile.

Wakefield.—*West Riding Asylum.* Res. Med. Supt., W. Bevan-Lewis, M.S., L.R.C.P. Access—Kirkgate and Westgate station, 1 mile.

Wallingford (Berks).—*Berkshire Asylum.*—Res. Med. Supt., J. W. A. Murdoch, M.B. Access—Cholsey, 1 mile.

Warlingham (Surrey).— *Croydon Mental Hospital.* Res. Med. Supt., E. S. Pasmore, M.D. Access—Croydon, 6 miles ; Upper Warlingham, 3¼ miles.

Warwick.—*Midland Counties Asylum,* Knowle, near Birmingham (for feeble-minded children). Sec. and House Gov., A. H. Williams. Med. Off., J. O. Hollick, M.B., M.R.C.S. Access—Knowle, ½ mile.

See also p. 829

Waterford.—*District Asylum.* Res. Med. Supt., J. A. Oakshott, M.D. Access—G. S. & W. R., North station, 2 miles.

St. Patrick's Inst., Belmont Park. Conducted by the Brothers of Charity. Med. Supt., W. R. Morris, M.B.

Wells.—*Somerset and Bath Asylum,* Wells, Som. Res. Med. Supt., Dr. G. Stevens Pope. Access—Wells station, 2 miles ; Masbury station, 2½ miles.

Whitchurch (Salop). — *St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., & C. H. Gwynn, M.D. Access—Whitchurch, 1 mile.

Whitefield (near Manchester).—*Overdale.* Res. Phys., P. G. Mould, M.R.C.S. Access—Prestwich and Whitefield station, 1½ miles ; Molyneux Brow, ¼ mile.

Whittingham (nr. Preston).—*County Asylum.* Res. Med. Supt., Dr. J. F. Gemmel. Access—Grimsargh station, 1¾ miles ; Whittingham station, 3 minutes.

Winchelsea (Sussex).—*Periteau,* near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea station, 1 mile.

Witham (Essex).—*The Witham Asylum* (Licensed for both sexes). Res. Med. Licensee, Dr. F. C. Payne. Access—Witham station, ¼ mile.

Woking. — *Surrey County Asylum,* Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, 1¼ miles.

Worcester.—*County & City Lunatic Asylum,* Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access—Worcester station, 4 miles.

York.—*The Pleasaunce* (ladies only). Prop. & Med. Supt., G. I. Swanson, M.D. Access—York, 1½ miles.

See also p. 830

The Retreat. Res. Med. Supt., Bedford Pierce, M.D., F.R.C.P. (Lond.). Access — York station, 1½ miles. Also Throxenby Hall, a branch house, near Scarborough.

See also p. 826

North Riding of Yorkshire Asylum, Clifton. Res. Med. Supt., A. I. Eades. Access—York, 2 miles.

Bootham Park Registered Hospital, Bootham. Res. Med. Supt., C. K. Hitchcock, M.D., M.A. Cantab. Access—York station, 1 mile.

TRAINING INSTITUTIONS.

Alton (Hants).—*Chandos Lodge* (for backward and feeble-minded patients). Res. Med. Supt., Dr. Fletcher Beach. Access—Alton station, S.W.R., 15 minutes.

Bath.—*Magdalen Hospital School* (for backward and imbecile children). Med. Off., D. L. Beath, M.R.C.S. Clerk, E. N. Fuller, LL.B., 5, Old King Street, Bath. Access—G.W.R., 1½ miles.

Dublin.—*Stewart Institution,* Palmerston, Chapelizod, Co. Dublin (for imbecile children). Med. Supt., Dr. F. E. Rainsford.

Dundee.—*Baldovan Asylum* (for the training and education of imbecile children). Matron, Miss Henry, Med. Supt., D. M. Greig, F.R.C.S. Access—Baldovan, 1 mile.

Kingston - on - Thames (Surrey).—*Normansfield, Trematon & Conifers* (for backward and feeble-minded of either sex). Res. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station, 8 minutes.

Lancaster.—*The Royal Albert Asylum* (for the feeble-minded of the Northern Counties ; 700 patients). Res. Med. Supt., Dr. A. R. Douglas. Sec., Saml. Keir. Access—Lancaster, 1 mile ; and *Brunton House,* a Private Home in connection with the Royal Albert Asylum.

Larbert (Stirlingshire). — *Scottish National Institution* (for education of imbecile children). Res. Supt., A. A. Skene. Med. Officer, Dr. R. D. Clarkson. Sec. & Treas., A. J. Fitch, Virginia Buildings, Glasgow. Access—Larbert station, ¾ mile.

London (Upper Norwood, S.E.).—*Grosvenor* (for boys), 84, Auckland Road. Miss Arkell.

See also p. 796

Southgate (Middlesex).—*Brook House* (for children). Res. Med. Prop., Harry Corner, M.D.

SANATORIA FOR CONSUMPTION, AND OTHER FORMS OF TUBERCULOSIS.

NOTE.—References to Sanatoria in the United States and Canada may be found in *A Directory of Institutions and Societies dealing with Tuberculosis*, New York; and *Consumption: its Relation to Man and His Civilization*, by John B. Huber, M.D., Philadelphia and London: J. B. Lippincott Co. Particulars of Foreign Sanatoria will be found in *Sanatoria for Consumptives*, by F. Rufenacht Walters, M.D. 3rd Edition. London: Swan, Sonnenschein & Co.

Axbridge (Somerset).—*St. Michael's Home.* Apply to Sister in Charge. Med. Off., R. W. Statham, M.R.C.S. Access: Axbridge, ½ mle. Terms free.

Aysgarth, R.S.O. (Yorks).—*Wensleydale Sanatorium.* Med. Supt., Edwd. M. Hime, M.B., Ch.B., Access—Aysgarth, ½ mile, via Northallerton, N.E.R., and Hawes Junction, M.R. *See also p.* 803

Banchory (Scotland).—*Nordrach-on-Dee.* Res. Phys., D. Lawson, M.A., M.D., D. C. Crole, M.B. Ch.B., F. L. Atkinson, M.B. Access—Banchory station, 2 miles.

Belbroughton (Worcs.). — *Midland Open-air Sanatorium,* Bourne Castle. Apply, Secretary. Res. Med. Off., Geo. F. Phillpot, M.R.C.S. Access—Hagley, G.W.R.; Bromsgrove, M.R.

Benenden (Kent). — *Sanatorium* of "National Association for the Establishment and Maintenance of Sanatoria for Workers suffering from Tuberculosis." Med. Supt., Leonard Crossley, M.D.

Bingley (Yorks.). — *Eldwick Sanatorium,* for females only. Vis. Phys., Dr. Margaret Sharpe. Access—Bingley station, 2 miles.

Bournemouth. — *Alderney Manor,* Parkstone. Res. Phys., Dr. W. Denton Johns. Access—Parkstone station, 2 miles.

Overton Hall, 6, *Poole Road.* Res. Prop, Dr. C. Guthrie Stein. Access — Bournemouth West, 7 minutes.

Royal National Sanatorium for Consumption and Diseases of Chest. Sec., A. G. A. Major. Res. Phys., P. J. Harris-Jones, M.B. Access —Bournemouth station, 1 mile. Terms 7/6 per week and a Governor's nomination.

The Firs Home (for advanced cases). Hon. Sec., Percy J. Duncan, M.D., Frogmore, Bournemouth. Hon. Med. Offs., P. J. Duncan, M.D., and S. G. Champion, M.D. Lady Supt., Miss MaGuire.

The Home Sanatorium, Southbourne West, near Bournemouth. Res. Phys., J. R. Morton, M.B. Access—Bournemouth Central, 2½ miles; Boscombe, 1½ miles: Christchurch, 2½ miles. *See also p.* 803

Bridge of Weir (Renfrewshire).—*Consumption Sanatoria of Scotland.* Hon. Sec., J. P. Maclay, Esq., 21, Bothwell Street, Glasgow. Med. Supt., John Guy, M.D. Access—Bridge of Weir, 2 miles.

Brighton. — *Municipal Sanatorium,* for Brighton townsfolk. Objects: educational, and for treatment of both early and advanced cases. Physician, Dr. Arthur Newsholme, M.O.H. for Brighton. Particulars, Town Hall, Brighton.

Chagford (Devon).—*Dartmoor Sanatorium* (near Exeter, Newton Abbot, and Okehampton). Res. Med. Supt. and Prop., Dr. A Scott Smith. Access—Moretonhampstead, G.W.R., 6½ miles; Okehampton station, L. & S.W.R., 11 miles.

Cheddar (Somerset).—*Engel Home,* for females only. Med. Supt., R. W. Statham, M.R.C.S. Apply to Lady Supt. Access—Cheddar station, 10 minutes.

Cheltenham.—*Cotswold Sanatorium,* Res. Phys., Dr. F. K. Etlinger. Address — Cotswold Sanatorium. near Stroud. *See also p.* 804

Chiltern Hills Sanatoria.—*Kingwood* and *Maitland Cottage* (for working classes), Peppard Common, Oxon. Res. Med. Prop., Dr. Esther L. Carling. Access—Reading, 6½ miles.

Clacton-on-Sea (Essex).—*Coppin's Green Sanatorium.* Res. Phys., Dr. J. E. Chapman. Access—Clacton-on-Sea, 1½ miles.

Crieff (Perthshire).—*Ellerslie Sanatorium.* Res. Prop., Thompson Campbell, M.D. Access—Caledonian Railway. Crieff station, ½ mile.

Darlington.—*Felix House,* Middleton St. George, Co. Durham. Med. Supt., C. S. Steavenson, M.B. Access—Dinsdale, 5 minutes.

Devon and Cornwall *Sanatorium*, Didworthy, South Brent. For consumptive poor of the two counties. Hon. Sec., S. Carlisle Davis, Esq., Princess Chambers, Princess Sq,, Plymouth. Res. Med. Supt., A. H. Wylie, M.D. Access—Brent, G.W.R., 2 miles.

Dorking (Surrey).—*Woodhurst Sanatorium* (for Ladies and Girls only), Tower Hill. Sec., Geo. Wright. Visiting Phys., Miss Mary R. McDougall, M.B., C.M. Ed. Access—L.B. & S.C.R. and the S.E. stations, both about 1 mile.

Terms: from 1½ guineas weekly according to bedroom accommodation.

Dundee (nr.), *Sidlaw Sanatorium*, Res. Phys.. Dr. A. K. Traill. Access—Auchterhouse station, 1½ miles.

Durham.—*Durham County Consumption Sanatorium*, Stanhope. Sec., Mr. F. Forrest, 54, John Street, Sunderland. Med. Supt., Dr. John Gray. Access—Stanhope station, 1 mile. Terms free and by payment.

Edinburgh, Craigleith.—*Royal Victoria Hospital for Consumption*. For the treatment of poor patients. Visiting Physicians, Dr. R. W. Philip and Dr. G. L. Gulland. Clerk and Treasurer, 4a, St. Andrew Square, Edinburgh.

Woodburn Sanatorium, Morningside. Res. Med. Prop., Mrs. I. Mears, L.R.C.P.I.

Eversley (Hants).—*Moorcote Sanatorium*. Res. Med. Supt., J. G. Garson, M.D. Access—Wellington College station, 4½ miles; Wokingham sta., 6 miles; Fleet, 6 miles.

See also p. 802

Farnham (Surrey).—*Crooksbury Sanatorium*. Res. Phys., Dr. F. Rufenacht Walters. Access—Farnham station, 3½ miles; Tongham, 2½ miles; Ash, 4 miles.

See also p. 802

Whitmead Sanatorium. Res. Phys., J. Hurd-Wood, M.D. Access—Farnham station, 3½ miles.

See also p. 803

Fortbreda, Belfast.—*Forster Green Consumption and Chest Hospital*. Vis. Phys., Drs. R. J. Purdon and J. Simpson. Sec., A. Shaw, 2, May Street, Belfast. Access—Belfast, 2 miles. Mainly for the poor; 6 beds free; others by small payment.

Frimley (Surrey). *Brompton Hospital Sanatorium*. Res. Med. Supt., Dr. M. S. Paterson. Access—Frimley station, 2 miles.

Hastings.—*Fairlight Hall Convalescent Home*, Old London Road, Ore, in connection with Margaret Street Hospital for Consumption and Diseases of the Chest (for Out-Patients), 26, Margaret Street, London, W. Sec., Alice M. Greg. Med. Off., Dr. N. F. Stallard. Access — Hastings, Motor bus, about 15 minutes. Payments, by subscriber's letter, 11/6.

Hull.—*Hull and East Riding Convalescent Home*, Withernsea. Sec., Benjamin Brooks, Royal Infirmary, Hull. Med. Off., A. E. Sproulle, L.R.C.P. Access—Withernsea stat.

Isle of Wight.—*Church Hill House*, Ventnor (Private Sanatorium). Matron, Miss Moyse-Hopkins.

Royal National Hospital for Consumption, Ventnor. Sec., Ernest Morgan, 34, Craven Street, Charing Cross, W.C. Terms 10/- per week and a recommendation from Governors.

St. Catherine's Home, Ventnor (for advanced cases). Apply to Sister Bernardine. Med. Officer, H. F. Bassano, M.A., M.B. Access—Ventnor, 5 mins. drive. Terms, by selection, 10/6 per week.

Kingussie (Inverness-shire, Scotland).—*The Grampian Sanatorium*. Physician, Walter de Watteville, M.D. Access—Main Highland Rly., Kingussie, ¾ mile.

Kinross-shire (Scotland).—*Ochil Hills Sanatorium*. Sec., D. Hill Jack, 141, West George St. Glasgow. Med. Supt., J. J. Galbraith, M.D. Access—Kinross junction, 4 miles.

Kirkmichael (Scotland).—*Knocksualtach*. Med. Supt., Mary F. Nannetti, L.R.C.P. Access — Blairgowrie station, 13 miles, by coach.

Leeds.—*Leeds Sanatorium for Consumptives*, Gateforth, near Selby, and *Leeds Hospital for Consumptives*, Armley. Sec., C. H. Sedgwick, 37, Great George St., Leeds. Terms free, for poor of Leeds.

Liverpool.—*Liverpool Sanatorium for Consumptives*, Kingswood, Frodsham. Sec., Alfred Shawfield, 77a, Lord St., Liverpool. Res. Phys., Dr. Herapath Wood. Access—Frodsham, L. & N.W.R. 3½ miles.

London.—*City of London Hospital for Diseases of Chest*, Victoria Park, E. Open-air treatment provided. Sec., H. Dudley Ryder.

Mount Vernon Hospital for Consumption and Diseases of the Chest, Hampstead. Access—Finchley Road (Met.) station, 1 mile. *Country Branch Hospital at Northwood.* Access—Northwood (Met. & G.C. Rly.) Hon. Vis. and Res. Staff. Free on recommendation of governors. Secretary, W. J. Morton.

Royal Hospital for Diseases of the Chest, 231, City Road, E.C. Med. Off., A. S. Hosford, M.R.C.S. Apply to the Secretary.

Long Stratton (Norfolk).—*Fritton Sanatorium.* Med. Director, Dr. Annie McCall. Matron, Miss Wainwright. Access — Forncett station, G.E.R., 4 miles.

Maldon (Essex).—*The Sanatorium.* Med. Off., H. L. Ewens, M.D. Access—Maldon East, 1½ miles.

Manchester.—*Hospital for Consumption and Diseases of Throat and Chest.* Hospital at Bowdon; Crossley Sanatorium, Delamere, Cheshire. (For poor and working classes, after personal examination at Manchester.) Sec., C. W. Hunt, Manchester. Res. Phys. (Bowdon), A. H. Norris, M.R.C.S. (Delamere), D. Lloyd Smith, M.B. Access—Bowdon: Altrincham station, ½ mile. Delamere: Mouldsworth or Frodsham, 3½ miles.

Margate (Kent).—*Royal Sea-bathing Hospital.* Sec., A. Nash, 13, Charing Cross, S.W. Access — Margate West, ¼ mile.

Meathop (near Grange).—*Westmoreland Sanatorium.* Res. Med. Supt., T. H. J. Hughes, M.R.C.S. Hon. Sec., Dr. W. Rushton Parker, Kendal. Access — Grange-over-Sands station, 2½ miles.

Mendip Hills, Blagdon, near Bristol. —*Nordrach-upon-Mendip.* Res. Phys., R. Thurnam, M.D. Access —Langford station, 5 miles; Wells or Cheddar, 8 miles.

Nayland (Suffolk). — *East Anglian Sanatorium*, and *Maltings Farm Sanatorium* for 16 poor men and 16 women patients. Med. Supt., Dr. Jane Walker, 122, Harley Street, W. Access—Bures station, G.E.R., 3½ miles. *See also p.* 804

Norfolk.—*Kelling Sanatorium*, Holt. Assistance given to poor patients unable to pay. Hon. Sec., Dr. H. W. McConnel. Res. Med. Off., Mr. W. J. Fanning. Access—Holt station, Norwich.

Mundesley Sanatorium, Mundesley. Res. Physician, S. Vere Pearson, M.B. Access—Mundesley station, 1 mile.

Nottingham.—*Sherwood Forest Sanatorium*, Mansfield, for persons of limited means, resident in Notts and district. Sec., G. Sheldon, 36*a*, Bridlesmith Gate, Nottingham. Res. Med. Off., Miss Ida E. Fox, M.D. Access—Mansfield, 3 miles. Free, or 10/- per week, on recommendation of subscribers.

Ockley *Sanatorium* (Surrey). Res. Phys., Dr. Clara Hind. Access—Ockley, L.B. & S.C.R., 1 mile.

Painswick (Glouc'stershire).—*Painswick Sanatorium, Cotswold Hills.* Res. Phys. and Prop., W. McCall, M.D. Access — Stroud, 4 miles; Gloucester, 6 miles.

Peebles.—*Manor Valley Sanatorium*, for patients with limited means. Apply Medical Superintendent.

Penmaenmawr (N. Wales).—*Nordrach in Wales, Pendyffryn Hall.* Res. Med. Prop., Dr. G. Morton Wilson. Access—Penmaenmawr station, 2 miles; Conway, 3 miles.

Ringwood (Hants).—*Linford Sanatorium.* Props. and Res. Phys., R. M. Smyth, M.D., and H. G. Felkin, M.D. Access—Ringwood station, 2½ miles.

Rockbrook (Co. Dublin).—*Larch Hill Sanatorium*, The Pine Forest. Res. Phys. and Prop. Dr. Leopold A. Hare. Access—Dublin. *See also p.* 803

Rudgwick (Sussex). — *Rudgwick Sanatorium.* Vis. London Phys., Dr. Annie McCall. Access—Rudgwick station, 5 minutes; Horsham station, 7 miles. *See also p.* 801

Ruthin (N. Wales).—*Vale of Clwyd Sanatorium, Llanbedr Hall.* Res. Props., Drs. G. A. Crace-Calvert and C. E. Fish. Access—Ruthin station, 2 miles. *See also p.* 804

Sandon, near Chelmsford (Essex).—*Merivale Sanatorium.* Res. Phys., H. N. Marrett, M.R.C.S. Access—Chelmsford station, 4 miles.

Shotley Bridge (Co. Durham). — "*Belle Vue" Sanatorium.* Res. Phys., Dr. E. W. Diver. Access—Shotley Bridge station, 1 mile.

Skipton (Yorks). *Eastby Sanatorium*, for males. Conducted by Bradford Board of Guardians. Med. Supt., B. H. Slater, F.R.C.S. Access—Embsay, 2 miles.

St. Leonards.—*Eversfield Chest Hospital*, West Hill. Sec., Miss Benwell. Res. Phys., T. Gambier, M.D. Fees, 17/- weekly, or 13/- with subscriber's letter, available 4 weeks. Access—West St. Leonards S.E.R., West Marina L.B. and S.C.R., within 5 minutes' walk.

Torquay.—*Mildmay Consumptive Home* for advanced cases only. Hon. Med. Offs., F. D. Crowdy, M.D., and H. P. Wiggin, M.R.C.S. Hon. Sec., Miss F. Gumbleton, Connemara, Torquay. Access—Torquay, 1 mile. Fees, 10/6 weekly, or 7/- with subscriber's letter.

Western Hospital. Open Oct. to May. Sec. F. Manley. Terms, 7/6 by nomination, 12/6 without.

Wallingford (Berks).—*The Chiltern Sanatorium*, Ipsden. Res. Phys., F. S. Arnold, M.B. Access—Goring station, G.W.R., 4¾ miles; or Wallingford, 4 miles.

Warrenpoint (Co. Down).—*Rostrevor Sanatorium.* Res. Phys., B. H. Steede, M.D. Access—Warrenpoint.

Wells (Somerset).—*Mendip Hills Sanatorium.* Phys., D. J. Chowry Muthu, M.D. Access—Wells station, 2¾ miles.

Wicklow.—*Altadore Sanatorium*, Kilpedder, Co. Wicklow. Res. Phys., Dr. J. C. Smyth. Access—Dublin to Greystones, from which it is 5 miles.

The Royal National Hospital for Consumption for Ireland, Newcastle, Wicklow. Hon. Sec., J. R. Orpen, 13, South Frederick Street, Dublin. Res. Phys. Frs. P. Leyland, M.B. Access—D.W.W.R. to Newcastle, Co. Wicklow, 3 miles. Minimum fees, 7/- weekly, on subscriber's recommendation and medical examination.

Winsley (Wilts).—*Winsley Sanatorium.* Beds provided and supported by Bristol, Bath, Swindon, Gloucester, Highworth, and Cirencester, for poor patients. Paying patients also received. Res. Med. Off., Dr. H Lewthwaite. Sec., Miss Richards. Access—Limpley Stoke station, 1 mile.

Wokingham.—*London Open-air Sanatorium*, Pinewood. Sec., H. W. Harris, 20, Hanover Square, W. Access—Wellington College, S.E.R., 2 miles; or Wokingham, S.W.R., 3½ miles.

Yelverton (South Devon). *Udal Torre Sanatorium.* Res. Med. Supt. and Prop., J. Penn Milton, M.R.C.S.

INSTITUTIONS FOR INEBRIATES.

LICENSED UNDER THE ACTS, 1879–1900.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* NOTE:—Ashford and Chiswick are Roman Catholic Religious Institutions.

† Cinderford, Cradley Heath, Herne Hill, King's Lynn, and Torquay, are C.E.T.S. Institutions.

MALES ONLY.

Buntingford (Herts). — *Buntingford House Retreat.* Two Res. Physicians. Access—Buntingford, G.E.R., 8 minutes. *See also p.* 841

Cinderford† (Glos.).—*Abbotswood House*, for Male Inebriates. Res. Supt., F. Eardley-Wilmot. Access—Cinderford or Newnham stations.

Cockermouth (Cumberland). — *The Ghyll Retreat.* Res. Med. Props., Drs. Cooper and Dobson. Access—Cockermouth, 11 miles.

Colinsburgh (Fife).—*Invernith Lodge Retreat.* Res. Med. Supt., Dr. J. Q. Donald. Access—Kilconquhar station, 4½ miles. *See also p.* 845

Dinas Mawddwy (Merionethshire).—*Plas-yn-Dinas.* Res. Med. Supt. and Licensee, Dr. W. F. Walker, J.P. Access—Cemmes Road station, 8 miles; Dolgelly, 9 miles. *See also p.* 843

Folkestone.—*Capel Lodge*, near Folkestone. Res. Prop., E. Norton, M.D. Access — Folkestone Junction, 2 miles.

Rickmansworth (Herts).—*Dalrymple House*. Res. Med. Supt., F. S. D. Hogg, M.R.C.S., L.R.C.P. Access —Rickmansworth station, Great Central & Metropolitan Railway, ½ mile; L. & N.W.R., 1 mile. *See also p.* 841

Thundersley (Essex). — *Salvation Army Retreat*. Licensees, Mrs. Frost, and James McLauchlan. Access—Leigh, L.T. & S.R., 2½ miles; Rayleigh, G.E.R., 3 miles.

FEMALES ONLY.

Ashford, near Staines.*—*Ecclesfield*, Apply to the Mother Superior. *See also p.* 839

Beverley (E. Yorks).—*Albion House*. Res. Supt., the Matron. Hon. Sec., Mrs. A. S. Pentith, The Limes, Sutton-on-Hull. *See also p.* 845

Chiswick.*—*St. Veronica's Retreat*. Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, ½ mile.

Cradley Heath† (Staffs). — *Corngreaves Hall*. Lic., Miss E. Eaves. Hon. Secretary, J. H. Broscomb, Lyncourt, Kingsbury Road, Erdington, Warwickshire. Access—Cradley and Old Hill stations, 1 mile.

Fallowfield. — *The Grove Retreat*, near Manchester. Licensee, Mrs. M. Hughes. Med. Offs., A. T. Wilkinson, M.D., and J. W. Hamill, M.D. Hon. Treas., S. Gamble. Access — Fallowfield station, 10 minutes. *See also p.* 839

Herne Hill.†—*Ellison Lodge*, Half Moon Lane. Res. Supt., Miss Corner. Med. Supt., Dr. P. Barham. Access—Herne Hill.

King's Lynn† (Terrington, St. Clement's). — *Hamond Lodge*. Res. Supt., the Sister in Charge. Med. Supt., S. R. Lister, M.R.C.S. Access — Terrington station, 1½ miles.

Leicester.—*Melbourne House*, Prop., Mr. H. M. Riley. Med. Attendant, R. Sevestre, M.A., M.D., Camb. London Consultant, F. M. Pierce, M.D., 50, Gordon Square, W. Nat. Tel., 362 Y Leicester. Station, 2 miles. *See also p.* 840

Newmains (N.B.).—*Newmains Retreat*. Res. Med. Supt., G. R. Wilson, M.D. Access—Hartwood station, Cal. Rly. *See also p.* 840

Reigate (Surrey.) — *Duxhurst*. Supt., Sister in charge. Med. Supt., A. Walters., M.R.C.S. Access—Reigate, 4 miles.

Sidlow Manor, near Reigate. Apply to the Sister Supt. *See also p.* 845

Spelthorne St. Mary (Bedfont. Middlesex). — Apply to Sister Superior, C.S.M.V. Access—Feltham, S.W.R., 1 mile.

Licensed under Inebriates Acts. Females—Primarily Gentlewomen and Middle Classes (24). Treatment — Physical, Moral, and Spiritual. *See also p.* 845

Torquay.† — *Temple Lodge*. Res. Supt., Sister in Charge. Med. Off., W. Odell, M.D., F.R.C.S. Hon. Sec., Mrs. H. H. Erskine.

Wandsworth. — *Northlands Retreat*. 20, Bolingbroke Grove, Wandsworth Common, S.W. Lics., Dr. J. Round and the Misses Round. Access—Wandsworth Common.

MALE AND FEMALE.

Bristol. — *Brentry*, Westbury - on - Trym, for cases arising under the Licensing Act, 1902. Res. Supt. and Med. Off., Dr. Fleck. Hon. Sec., Rev. H. N. Burden. Access —Clifton Down station, 3½ miles.

Maldon (Essex).—*Rivermere*, Osea Island. Res. Med. Supt., F. F. Moore, L.R.C.S.I.

Twickenham. — *High Shot House Dadson Nursing Home*. Med. Supts., M. H. Gardiner, M.B., and E. Le F. Payne, M.R.C.S. Apply direct, or to office of Dadson Nursing Homes, 1, Mitre Court, Temple, E.C. Access—St. Margaret's station from Waterloo, 300 yards; Richmond, 1½ miles.

Average period of residence — four weeks. *See also p.* 842

REFORMATORIES CERTIFIED UNDER THE INEBRIATES ACT, 1898.

MALE AND FEMALE.

Bristol.—*Brentry certified Inebriate Reformatory*, Westbury-on-Trym. Res. Supt. and Med. Officer, Dr. D. Fleck. Hon. Sec., Rev. H. N. Burden. Access—Clifton Down, Redland, or Patchway station, 3½ miles.

FEMALES ONLY.

Ackworth (Yorkshire).—*North Midlands Inebriate Reformatory*. Res. Supt., the Officer in Charge. Med. Off., Dr. R. H. Rigby. Access—Ackworth station, 1½ miles.

Bristol.—*Royal Victoria Home*, Horfield. Med. Off., Dr. W. Cotton. Hon. Sec., Rev. H. N. Burden. Access—Montpelier and Bristol stations.

Chesterfield (Derbyshire).—*Midland Counties Inebriate Reformatory*, Whittington. Med. Off., Dr. A. M. Palmer. Access—Whittington station, ½ mile; Chesterfield, 5 miles.

East Harling (Norfolk). — *Eastern Counties Inebriate Reformatory*, East Harling, near Thetford. Res. Med. Supt., L. O. Fuller, M.R.C.S. Access—Harling Road station, 3½ miles.

Horley (Surrey).—*Farmfield*. For London cases, under Sec. II of the Act. Res. Supt., Miss Forsyth. Med. Off, Dr. C. F. Williamson. Access—Horley station, 2½ miles.

Langho (Lancashire). — *Lancashire Inebriate Reformatory*, Langho, near Blackburn. For Lancashire cases. Res. Supt. and Med. Off., Dr. F. A. Gill. Access—Langho station, 1½ miles.

Lewes (Sussex).—*Southern Counties Inebriate Reformatory*, St. Anns, Lewes. Res. Supt., the Officer in Charge. Med. Off., Dr. W. A. Dow. Access—Lewes station, 1 mile.

UNLICENSED HOMES.

Carnoustie (N.B.)—*The Lodge*. Apply to the Secretary.

Croydon.—*Woodside Court*, Lower Addiscombe Road, for both sexes. J. M. Hobson, M.D. Access—East Croydon, 12 minutes by tram.

Durham.—24, Allergate, for friendless and inebriate women; 4/- per week. Hon. Sec., Miss King. Med. Supt., Dr. Robson. Access—Durham, ½ mile.

Edinburgh.—*Queensberry Lodge*, for ladies. Supt., A. Miller. Med. Supt., Dr. William Russell. Access—Waverley station, ½ mile.
See also p. 841

Fifeshire.—*Navitie Home*, near Lochgelly, for ladies. Hon. Sec., Mrs. Lockhart, 9, Royal Terrace, Edinburgh. Access—Blairadam, or Kinross, 4 miles on main line to to Perth. *See also p.* 839

Hounslow (Middlesex).—*West Holme*, for ladies. Supt., Matron in Charge. Med. Supt., Dr G. A. S. Gordon. Access—Hounslow ¾; Dist. Rly., ¼ mile.

Huddersfield (Yorks).—*High Flatts Sanatorium*, for ladies. Matron, Miss A. Jones. Access—Denby Dale, 1½ miles.

Leicester.—*Tower House*, for ladies. Prop., Mrs. Mills. Med. Attendant, A. V. Clarke, M.D. Access—Leicester station, 1½ miles.
See also p. 844

Liverpool.—*Temperance Home*, 318, Upper Parliament Street, for women. Supt., Miss A. J. Wilson. Med. Officer, C. E. Solomon, M.D.

London. — *Dadson Nursing Home*, Kensington, W. Apply to office of Dadson Nursing Homes, 1, Mitre Court, Temple, E.C. Ladies and gentlemen can be attended by their own medical men.

Average period of residence — four weeks.

See also p. 842

Norwood Sanatorium, 93, Church Road, Upper Norwood, S.E. Med. Supt., F. Hare, M.D. Access—Crystal Palace station, 10 minutes.
See also p. 844

Weir Hall, Edmonton. Access—Silver Street (G.E.), 1 mile. Palmers Green (G.N.), 1½ miles. *See also p.* 840

Norwich.—*Dadson Nursing Home.* Philanthropic home for working class men. Apply to office of Dadson Nursing Homes, 1, Mitre Court, Temple, E.C. Med. Supt., Dr. J. M. G. Bremner.

Average period of residence — four weeks. *See also p.* 842

Reynoldston, R.S.O. (Glam.).—*Gower Lodge Retreat*, for gentlemen. Res. Med. Supt., A. E. Mole, M.B., M.O.H. Access—Swansea, M.R., or G.W.R.

Richmond.—*Dadson Nursing Home*, Richmond. Philanthropic home for working class women. Apply to office of Dadson Nursing Homes, 1, Mitre Court, Temple, E.C.

Average period of residence — four weeks.

See also p. 842

West Derby (near Liverpool).—*Vergmont Sanatorium*, for ladies. Supt., Miss Mary M. Hocking. Med. Offs., Dr. H. Harvey, and Dr. C. Thurstan Holland. Access—West Derby station, ¼ mile; Tue Brook station, ½ mile; Edge Hill station, 3 miles. *See also p.* 844

HYDROPATHIC ESTABLISHMENTS.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry, which is *stamped for reply.* This will account for some omissions in the present edition.

Aberdeen.—*Deeside Hydropathic*, Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen, thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes. *See also p.* 820

Baslow.—*Grand Hotel and Hydro.* Access—Bakewell station, 4 miles by 'bus. *See also p.* 823

Bath.—*Lansdown Hospital and Nursing Home*, Bath (invalids only; special arrangements for patients suffering from gout, rheumatism, and physical infirmities). Med. Supt., Dr. Percy Wilde. Access—M.R. or G.W.R. station, Bath, about 1 mile. *See also p.* 798

Ben Rhydding.—*Ben Rhydding Hydro.* Phys., Thos. Scott, M.D., and Dr. W. R. Bates. Access—Station, a few hundred yards. *See also p.* 823

Bexhill-on-Sea.—*Wilton Court Hotel and Hydro.* Manageress, Mrs. W. Purrott.

Bishops-Teignton (nr. Teignmouth).—*The South Devon Hydro & Health Resort.* Prop., C. F. Carpenter. Med. Supt., Arthur E. Hayward, M.R.C.S. Access — Teignmouth, 2½ miles.

Blackpool.—*Matlock Hydro & Boarding House*, Station Road. Access—3 minutes' walk from South Shore station.

Bournemouth (Hampshire).—*Bournemouth Hydropathic.* Res. Phys., W. J. Smyth, M.D. Access—East station, 1½ mile; West station, ½ mile. *See also p.* 822

Bridge of Allan.—*Bridge of Allan Hydropathic Co.* Manageress, Miss McNeill. Vis. Phys., Dr. Haldane. Access—Station, ¼ mile.

Bristol. — *The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Green. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

Burgess Hill (Sussex).—*Wynnstay Hydro.* Manager, Richd. Haynel.

Bute.—*Kyles of Bute Hydropathic*, Port Bannantyne, Rothesay. Man., A. Menzies. Med. Supt., Dr. A. J. Hall. Access—Clyde steamers call daily.

Buxton.—*Buxton Hydropathic*, Manager, G. W. Bosworth. Access—Station, 4 minutes. Nat. Tel.: No 5. *See also p.* 823

Corber Hill Hydro, Clarendon House. Man., Miss L. Adams. Access—Buxton station, 5 minutes.

Haddon Hall Hydro. Prop., Mrs. G. E. Hall.

The Peak Hydro. Man., Mrs. Macgregor.

Callander, N.B.—*Callander Hydro.* Apply, Manager.

Caterham (Surrey). — *Surrey Hills Hydropathic.* Res. Med. Supt., A. B. Olsen, M.D.

Clifton (near Bristol).—*Clifton Grand Spa and Hydropathic.* Access—Clifton Down station, 1 mile; Bristol station, 1½ miles.

Cork.—*St. Ann's Hill Hydropathic.* Res. Phys., A. A. Hudson, M.D. Access—Blarney station, 2½ miles; Muskerry Light Railway from Cork, station on grounds.

Crieff.—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

Dunblane.—*Philp's Dunblane Hydropathic*, Perthshire. Res. Phys., Dr. S. M. Sloan. Access—Dunblane station, ¾ mile. *See also p.* 818

Eastbourne.—*Eastbourne Hydropathic.* Man., O. F. Bergann.

Edinburgh.—*Hydropathic*, Slateford. J. Bell, Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

Forres.—*Cluny Hill Hydropathic.* Vis. Phys., Dr. John Adam. Access—Forres station, 1 mile; Inverness, 24 miles.

Grange - over - Sands. — *Hazelwood Hydropathic.* Physicians, Richard Lowther, M.D., and Owen Gwatkin, M.R.C.S. Access—Carnforth, L. & N.W.R., and thence by Furness Railway; Grange-over-Sands, ¼ mile.

Harrogate (Yorkshire).—*The Cairn Hydropathic.* Near Leeds and Bradford. Man., Mrs. Baker. Access—Harrogate station, ½ mile. 3 minutes from Royal Baths and Pump Room. *See also p.* 815

The Harlow Manor Hydro. Man., Mr. Fenn. Med. Supt., Dr. Dimmock.

The Harrogate Hydropathic. Phys., Drs. T. Johnstone and R. McLeod Veitch. Access—Harrogate station, ½ mile.

Hexham (Northumberland).—*Tynedale Hydropathic.* Prop., F. G. Grant. Med. Supt., Dr. Stewart. Access—Hexham, 1 mile; Newcastle, 19 miles.

Ilfracombe.—*The Cliffe Hydro.* Med. Supt., Chas. Toller, M.D. Apply to the Secretary. Station 1 mile.

Ilkley (Yorkshire). — *Craiglands Hydro., Lim.* Res. Med. Supt., Henry Dobson, M.D., C.M.

Ilkley Wells Hydro. Med. Supt., Thos. Scott, M.D. Manageress, Miss Fender. Access — Ilkley station, ¼ mile.

The Spa Hydropathic, near Leeds and Bradford. Manageress, Miss Pugsley. Med. Supt., T. Johnstone, M.D. Access—Ilkley, 3 minutes.

Troutbeck Hydro. Manageress, Miss Moorhouse.

Isle of Man.—*Ramsey Hydro.*, Ramsey (about 16 miles from Douglas). Med. Supt., Dr. H. C. Sugden. Access—Ramsey, 10 minutes. *See also p.* 814

Kilmacolm (Renfrewshire).—*Hydropathic.* Access—Greenock, 7 miles; Glasgow, 16 miles, G. & S.W.R.

Leicester. — *The Sanitarium*, 82, Regent Road. Med. Supt., A. B. Olsen, M.D.

Limpley Stoke (near Bath).—*West of England Hydropathic.* Res. Med. Supt., Gerard Carré, M.D. Access—Limpley Stoke station.

Lincoln.—*Northcote Hydro.*, Woodhall Spa. Med. Supt., R. Cuffe, M.R.C.S.

Llandudno.—*Hydropathic and Winter Residence.* Med. Supt., James Craig, M.B. Access—Llandudno station, 5 minutes.

Malvern.—*The Malvern Hydropathic.* Res. Prop., J. C. Fergusson, M.D. Access—Great Malvern station, ¼ mile. *See also p.* 817

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells station, G.W.R., ½ mile; Great Malvern station, 2 miles.

Matlock.—*Matlock House Hydropathic*, Matlock. Physician, W. Moxon, M.D., J.P. Access—Matlock, M.R., ¼ mile.

Rockside Hydropathic, Matlock. Med. Supts., Drs. A. L'Estrange Orme and Marie Goodwin. Access—Matlock, ¾ mile. *See also p.* 821

Royal Hotel and Baths, Matlock Bath, connected with the Natural Thermal Mineral Spring. Phys., W. C. Sharpe, M.D. Access—Matlock Bath station. *See also p.* 820

Smedley's Hydropathic, Matlock. Res. and Vis. Physicians. Access—Matlock station, ½ mile; omnibus. *See also p.* 816

Melrose.—*Waverley Hydropathic.* Con. Phys., Drs. Calvert and Wade. Access—Melrose station, 1 mile.

Moffat.—*The Moffat Hydropathic.* Man., Miss Gardner. Med. Supt., Dr. Huskie. Access—Moffat station, 1 mile.

Peebles.—*Peebles Hotel Hydropathic.* A German Kuranstaldt in Scotland. All the latest Electrical Treatment, with Baths fully equipped by Continental Experts. All the advantages of a Continental Bad with the comforts of a first-class modern hotel. Resident Specialist. *See also p.* 819

Rhyl (North Wales).—*The Claremont Hydro-Hotel.* Manager, W. G. Story.

Rothesay. — *Glenburn Hydropathic.* Med. Supt., Dr. Marshall. Access—Wemyss Bay, ½ hour's sail. *See also p.* 818

Scarborough.—*Hydro.* Access—Scarborough. N.E.R., ¼ hour.

Shandon. — *Shandon Hydropathic.* Consulting Phys., Dr. Douglas Reid; Phys., Dr. Wm. R. Sewell. Access—N.B.R. and Steamer.

Skelmorlie. -- *Wemyss Bay Hydropathic.* Med. Supt., Dr. W. C. Philp. Access—Wemyss Bay station, ½ mile. *See also p.* 822

Southport (Birkdale Park).—*Smedley Hydropathic.* Phys., J. G. G. Corkhill, M.D. Southport or Birkdale stations. *See also p.* 822

Kenworthy's Hydropathic, 51, Bath Street. Phys., Drs. Kenworthy and Wilshaw. Access—Chapel Street (L. & Y.), Lord St. (Cheshire Line) ¼ mile.

Sunnyside Hydropathic Compy. Man., J. Marshall. Access—Southport stations, ½ mile.

Tunbridge Wells.—*The Spa Hotel.* Access—Station, about ½ mile; London, 32 miles. Man., H. R. Willats.

Ulverston and Barrow-in-Furness.—*Conishead Priory Hydropathic.* Med. Supt., Dr. Ashburner. Access—Ulverston station.

Watford.—*The Hall*, Bushey. Man., Col. Coyne. Med. Supt., Dr. F. Smith. Access—L. & N.W.R., 1 mile.

Windermere. — *Windermere Hydropathic.* Access—Windermere, L. & N.W.R. 1 mile. Sec., W. Martindale.

NURSING INSTITUTIONS AND PRIVATE HOMES FOR INVALIDS.

NURSING INSTITUTIONS.

Bath.—*Lansdown Hospital Nursing Home and Private Nursing Institute*, Lansdown, apply the Matron. *See also p.* 798

Bournemouth.—*Victoria Nurses' Institute and Home Hospital*, Cambridge Road. Matron, C. Forrest. Access—Bournemouth West stat. *See also pp.* 795 *and* 801

Bristol. — *Royal Infirmary, Private Nurses, Massage and General Nursing.* Matron, Miss A. B. Baillie. *See also p.* 792

General Hospital. Matron, Miss S. Morris; Sec., Wm. Thwaites. *See also p.* 792

Cheltenham. — *General Hospital* Private Nursing Staff. Matron Miss G. Möller. *See also p.* 794

Devonport.—*Royal Albert Hospital Nursing Inst.* Matron, Miss E. G. Woodward.

Fee charged, per week: Ordinary cases, £1 11s. 6d.; Infectious, Operation and Hysterical, £2 2s.; Small Pox £3 3s.; Massage, £2 2s., or 5s. per visit. Travelling expenses and laundry extra.

Edinburgh.—*Royal Scottish Nursing Inst.*, 69, Queen Street, and 14, Castle Street, Dumfries. Matron, Miss King.

Ordinary cases, 30/- weekly; Mental, Massage, Infectious, 42/-. Maternity, £8 8s. one month. Telegrams: "Matron, Edinburgh." Telephone 2228.

See also p. 795

London.—*Baker Street Association of Hospital-Trained Nurses*, 15, Baker Street, W. Supt., Miss Masters.

See also p. 795

Hooper's (Miss) Trained Nurses' Institute 9, Upper Baker Street, W. Also at 35, Holmdale Road, West Hampstead, N.W.

See also p. 794

Male Nurses' Association, 23, York Place, Baker Street, W. Supt., Wm. Gutteridge.

See also p. 794

St. Luke's Hospital, Old Street E.C. Trained Nurses for Mental, Nervous, and Massage Cases. Apply Matron. *See also p.* 794

Temperance Male Nurses' Co-operation, Ltd., 43, New Cavendish Street, W.; also at Manchester and Edinburgh. Secretary, M. D. Gold. *See also p.* xxiv

Wigmore Nurses' Co-operation and Home for Paying Patients, 59, Weymouth Street, W. Lady Supt., Mrs. Gibbins.

See also p. 795

Sunderland. — *Nursing Inst. and Home for Trained Nurses*. Matron, Miss C. Aldis.

Thoroughly reliable Nurses supplied for Medical, Surgical, Mental, and Maternity cases.

PRIVATE HOMES FOR INVALIDS.

Alderley Edge (Cheshire). — *The David Lewis Colony* (for Epileptics). Director, A. McDougall, M.D., Warford, near Alderley Edge. *See also p.* 801

Bournemouth. — *Victoria Nursing Institute and Home*, Cambridge Road (for paying patients). Apply the Matron.

See also pp. 795 *and* 801

Buxton.—*Corbar Tower*, Dietetic and Medical Home. Apply Mrs. Owen. Access—Station, Pump Room and Baths, 10 minutes' walk.

See also p. 799

Chilcompton (near Bath).—*Downside Lodge* (for ladies of weak intellect). Med. Supt., G. Pollard, M.D. Access—Chilcompton, about ¼ mile.

Eversley (Hants).—*Glencote* (Sanatorium for Non-tubercular cases). Res. Med. Supt., J. G. Garson, M.D. Access—Wellington College station, 4½ miles; Fleet, 6 miles.

See also p. 802

Falmouth.—*Tregaer* (for Invalids and Convalescents). Res. Prop., A. Gregor, M.D. *See also p.* 799

Hadlow Down, Buxted (Sussex).—*South Beacon* (for the care and treatment of gentlemen mentally affected, but not ill enough to be certified) Prop., Philip H. Harmer. Access—Buxted, 3 miles; Mayfield, 4 miles; Heathfield 4 miles.

See also p. 801

Haslemere, Surrey.—*Haslemere Nursing Home*, "*Courtsfold.*" Medical, Weir-Mitchell, Rest Cure, and Chronic cases received. Apply to the Misses Ringwood and Inge.

See also p. 799

Jedburgh.—*Abbey Green*. Res. Prop., Wm. Blair, M.D. Access—N.B.R., Jedburgh. Tel. No. 3.

See also p. 796

Jersey.—*Pinehurst Nursing Home*. Med. Supt., Dr. Symons, Beaumont, Jersey. Secretary, Miss Oxenden.

For any kind of delicacy, or first stages of threatened phthisis.

London.—*St. Thomas's Home*, St. Thomas's Hospital, Westminster Bridge. Apply, Sydney Phillips, B.A., St. Thomas's Hospital, S.E. Access — Waterloo, 5 minutes. Tel.: Hop. 1637. *See also p.* 798

Ryde (Isle of Wight). — *Crescent House* (for treatment of diseases due to defective metabolism, etc.). Apply Dr. G. M. Lowe.

See also p. 799

Stanmore, Middlesex. — SCARLET FEVER *Convalescent Home (The Mary Wardell)*. Vis. Phys., J. D. Thomas, M.D. Hon. Sec., Miss M. Wardell. *See also p.* 798

PRINCIPAL BRITISH SPAS,

WITH INDICATIONS FOR THEIR THERAPEUTICAL EMPLOYMENT.

Bath (Somersetshire).—Sheltered from the N. and N.E. winds by a range of hills from 600 to 800 feet high; 2 hours from London (Paddington), 12 miles from Bristol. Average rainfall 30·79 inches. Climate mild and equable.

Waters.—Three thermal springs, known respectively as "The Hot Spring or Old Royal," 120° F.; "The King's Bath Spring," 114° F., used for drinking purposes, and "The Cross Bath Spring." The waters contain sulphates of calcium, strontium, sodium, and potassium, with calcium carbonate, the chlorides of magnesium, sodium, and lithium, etc.

Therapeutic indications.—Gout, chronic rheumatism, rheumatoid arthritis, sciatica, disorders of the digestive organs, anæmia, skin diseases, nervous disorders and debility.

Baths.—Modern baths of every description, including Aix massage douche, electric, water and hot air, natural vapour, needle, sulphur, and swimming. *See also p.* 811.

Buxton (Derbyshire).—1000 feet above sea level, 3½ hours from London (St. Pancras), 23 miles from Manchester, 30 from Sheffield, 53 from Liverpool. Bracing climate. Lowest absolute humidity of any health resort in Great Britain.

Waters.—Thermal springs 82° F. Powerful radio-active properties. More highly charged with nitrogen gas than any other spring. Chalybeate spring.

Therapeutic indications.—Gout, rheumatism, rheumatoid arthritis, sciatica, nervous diseases, skin diseases, especially those of gouty origin, malaria and other tropical diseases, colitis, anæmia, and diseases of women.

Baths.—Recently extended. Immersion, douche, vapour, douche-massage. Complete electrical department. Moor baths. Plombières douches. Chalybeate baths, and carbonic acid gas baths.

Hydropathic Establishment.—Buxton Hydropathic (*See p.* 823).

Cheltenham (Gloucestershire).—250 feet above sea level, 3 hours from London. Rainfall about 27 inches. Protected from N. and N.E. winds.

Waters.—The mineral waters are of two kinds. One is alkaline from contained soda carbonate, the other is impregnated with the sulphates of soda and magnesia. They are again receiving some attention from the medical profession, and seem likely to successfully compete with Carlsbad and Marienbad in attracting a portion of the patients formerly sent abroad.

Therapeutic indications.—Gout, dyspepsia, dietetic disorders generally, neurasthenia, and other conditions.

Baths.—Good modern baths, with massage.

Hotel.—The Queen's Hotel (*See p.* 813).

Droitwich (Worcestershire.)—150 feet above sea level, 2½ hours from London (Paddington), 19 miles from Birmingham, 6 from Worcester. Rainfall 23 inches. Mean winter temperature 47° F., summer 69·9° F. Well protected from N. and N.E. winds.

Waters.—The most powerful saline in the world. The brine is pumped from 200 feet below the ground level. Temperature 54° F., and is heated by introducing steam. It is 10 to 12 times as strong as that of the ocean (channel), containing in every gallon 20,000 grains of saline in excess of any known waters: the waters possess radio-active properties.

Therapeutic indications.—Chronic muscular and articular rheumatism, rheumatoid arthritis, chronic articular or irregular gout, neuritis, neuralgia, heart diseases, especially those of myocardium—effect similar to Nauheim treatment,—neurasthenia, anæmia, chlorosis, some sclerotic diseases of spinal cord, skin diseases of a dry, scaly nature, e.g., chronic eczema and psoriasis.

Baths.—Immersion, douche, needle, vapour, and swimming.

Hotel.—Worcestershire Brine Baths Hotel, and Brine Baths (*See p.* 812).

Harrogate (Yorkshire).—450 feet above sea level, 4 hours from London, 17 miles from Leeds, 20 from York. The climate is stimulating and fairly dry—bracing moorland air.

Waters.—Celebrated for the medicinal properties of its 80 springs—sulphurous, chalybeate, saline, etc.

Therapeutic indications.—Anæmia, chlorosis, gout, rheumatism, disorders of liver and stomach, muco-membranous colitis, chronic appendicitis, and skin diseases.

Baths.—There are four establishments for treatment, the chief being the Royal Baths, where 50 different treatments are given, including sulphur baths, douche, Nauheim, vapour, Russian, Turkish, electric, mineral, electric light, ozone, etc. *See also p.* 814.

Hydropathic Establishment.—The Cairn Hydropathic (*See p.* 815).

Ilkley (Yorkshire).—Situated on the southern slope of the valley of the Wharfe, rising rapidly from the bank of the river to a height of 750 feet above sea level ; distant 16 miles from Leeds, 14 from Bradford, and 18 from Harrogate. Occupying a sheltered position. The annual rainfall, 35 inches, is considerably less than on the other side of the river, with fewer rainy days. Mean annual temperature 48° F. Being in close proximity to extensive moors the air is bracing and exhilarating and at the same time dry and soft, having a wonderfully restorative effect upon invalids.

Waters.—The water supply obtained from springs is remarkably pure, bright and sparkling, and does not act on lead. Chalybeate waters.

Therapeutic indications.—Gout, rheumatism, neuritis, neurasthenia, anæmia, asthma, and bronchitis cases are benefited. The treatment adopted is that known as hydro-therapeutic.

Baths.—Complete suites of baths are to be found in the numerous establishments, and at Ben Rhydding there is in addition an electric installation comprising static electricity, high frequency, X rays, radiant light, and vibratory massage.

Hydropathic Establishment.—Ben Rhydding Hydropathic (*See p.* 823).

Leamington Spa (Warwickshire).—170 feet above sea level, 1 hour 50 minutes from London (Paddington or Euston), 24 miles from Birmingham. Equable and mild climate.

Waters.—Saline—chalybeate. Resembling those of Homburg, but are more generally useful.

Therapeutic indications.—Muscular and articular rheumatism, gout, rheumatoid arthritis, neuralgia and neuritis, diseases arising from a plethoric condition of the chylopoietic viscera, eczema and other irritative disorders of the skin, conditions of increased vascular tension and chronic interstitial nephritis.

Baths.—Turkish, medicated, swimming, and electric of all kinds.

Llandrindod Wells (Radnorshire). — Situated in Central Wales, at an altitude of 750 feet. About 6 hours from London on the L. & N.W. Ry. It lies in the centre of a plateau of hills rising in places to over 2000 feet. Sheltered from the east, and open to the south and west. The soil is porous, and dries up quickly after rain. The climate is extremely bracing.

Waters.—There are a great variety of mineral waters—sodium chloride, sulphur, iron, magnesium, chloride of calcium, and lithia springs similar in composition to those at Kissengen, Homburg, and Contrexéville. Slightly aperient and strongly diuretic.

Therapeutic indications.—The diseases most benefited are those in which any digestive derangements are present, the various forms of gout and rheumatism, rheumatoid arthritis, neuritis and fibrositis, gall-stones and biliary stasis, renal calculus, or any kidney or bladder condition requiring diuresis, neurasthenia, or debility from over-work or convalescence.

Hotel.—Ye Wells Hotel (*See p.* 814).

Llangammarch Wells (Breconshire).—In an open valley surrounded by moorland, 600 feet above sea level. On the L. and N.W.Ry., 5¾ hours from London, 4 from Manchester, 4½ from Liverpool. Mean annual temperature 47·5° F., summer 55·4° F. Well protected from the east.

Water.—Saline, containing the chlorides of barium, calcium, magnesium, lithium, and sodium ; the only one of its kind in the British Isles. The barium salt has a physiological action on cardiac muscle similar to that of digitalis and strophanthus, and is also a good diuretic. Administered both internally and externally. Temperature 56° F. ; is heated for bathing purposes. A modified Nauheim system of baths, exercises, massage, and hill climbing is carried out.

Therapeutic indications.—Cardiac diseases, organic and inorganic, especially affections of the myocardium due to influenza. Graves' disease, chronic muscular and articular rheumatism, osteo-arthritis, gout, sciatica, and neurasthenia.

Baths.—Immersion, douche, and needle.

Hotel.—Lake Hotel and Barium Waters (*See p.* 873).

Malvern (Worcestershire).—500 feet above sea-level, about 3 hours from London (Paddington). Air dry and bracing. Climate equable.

Waters.—Slightly alkaline and earthy. Brine and saline baths.

Therapeutic indications.—Acute and chronic rheumatic gout and rheumatism, neuralgia, sciatica, lumbago, bronchial and chest complaints, and skin diseases.

Hydropathic Establishment.—Dr. Fergusson's Hydropathic (*See p.* 817).

Hotel.—Belle Vue Hotel (*See p.* 814).

Matlock Bath (Derbyshire).—300 to 800 ft. above sea level, 3½ hours from London (St. Pancras), 46 miles from Manchester, 16 from Derby. Rainfall 29 inches. One of the most sheltered towns in England.

Waters.—Thermal Springs. Mild sulphated—alkaline—saline waters at 68° F., containing 33 grains per gallon of salts, mainly magnesium and calcium bicarbonate, and magnesium sulphate. Owing to its peculiarly soft and unctuous character it is especially valuable in bathing and douche operations, particularly those associated with massage, such as those known as the "Aix" and "Vichy" douches.

Therapeutic indications.—Rheumatism, gout, rheumatoid arthritis, neuritis, neurasthenia, catarrhs (bronchial, gastric, or enteric), anæmia, cardiac asthenia, chronic diseases of the liver or kidneys, and digestive and bilious disorders.

Baths, etc.—A complete modern installation exists for the administration of all kinds of baths, douches, packs, and other hydropathic treatment, electricity, massage, inhalations, Nauheim baths, with Swedish exercises.

Fango-di-Battaglia.—The volcanic mineral deposit from the hot springs near Padua (N. Italy) is imported, and extensively used in the treatment of gout, rheumatoid arthritis, and neuritis.

Hydropathic Establishment.—The Royal Hotel and Baths (*See* p. 820).

Matlock Bank (*Matlock* station, one mile by rail from Matlock Bath).—300 to 800 feet above sea level, 3½ hours from London (St. Pancras), 45 miles from Manchester, 17 from Derby. South-westerly aspect, and well sheltered from the north. Climate mildly bracing. Sunshine above the average. The Matlock system of hydropathic treatment is carried out in all its branches, and the principal Hydros are installed with latest electric baths and appliances, including high-frequency, Dowsing radiant light and heat, Schnee four-cell, X rays, etc. They also include Turkish, Russian, plunge, medicated and inhalation baths, Aix and Vichy douches, etc.

A feature of the Matlock Hydros is, that as a rule they are complete in their own grounds, and contain croquet and tennis lawns, and bowling and putting greens, which, as a means of recreation and exercise, form a valuable auxiliary to a course of hydropathic treatment.

Hydropathic Establishments.—Rockside Hydropathic (*See p.* 821), and Smedley's Hydropathic (*See* p. 816).

Strathpeffer Spa (Ross-shire).—In the Highlands of Scotland. 180 to 300 feet above sea level. Through carriages twice a week during summer from London, 15 hours. Sheltered from N. and N.E. winds. Prevailing wind S.W. Sandy soil. Bracing air.

Waters.—Sulphurous and chalybeate. Former, very rich in sulphuretted hydrogen gas and sulphates. Four sulphur wells in use: (1) Old well; (2) Upper; (3) Strong; (4) Cromartie. No. 4 contains over 19 cubic inches H_2S to gallon. Sulphates the predominating salt. Have strong diuretic and mild aperient action.

Therapeutic indications.—Chronic and subacute gout and rheumatism (especially articular), rheumatoid arthritis, chronic skin diseases (eczema, acne, psoriasis, etc.), especially when gouty or rheumatic, chronic disorders of the digestive system, chronic gastric or intestinal catarrh, sluggish portal circulation, congested liver, biliary and urinary calculi, neurasthenia, anæmia, obesity, chronic metallic poisoning, dilatation of heart, neuritis.

Baths.—Sulphurous (immersion), inhalation, peat, douche (Aix and Vichy), needle, pine, Russian, Nauheim, radiant heat (electric), and high-frequency current.

Hotel.—The Ben Wyvis (*See p.* 813).

Tunbridge Wells (Kent).—400 feet above sea level, 1 hour from London, 30 miles from Hastings, Brighton, and Eastbourne. Rainfall 30 inches. Mean winter temperature 41·3° F., summer 55·9° F. Lies upon a bed of sandstone. Climate is mildly tonic and invigorating. Prevailing winds W. and S.W.

Waters.—Chalybeate spring, containing 4 grains ferrous carbonate to the gallon, with sulphates and chlorides of potash, soda, and calcium.

Therapeutic indications.—Diseases of respiratory organs (bronchitis, asthma, and phthisis), early cardiac cases, diseases of digestive organs, and especially diseases of nervous system (neurasthenia and mental depression), as well as in convalescence and infantile disorders. Waters indicated in anæmia, chlorosis, and allied conditions.

Baths.—Immersion, douche, needle, vapour and swimming, medicated and electric light.

Woodhall Spa (Lincolnshire).—Built upon ironstone sand, through which the surface water percolates very rapidly. Midway between Boston and Lincoln, about 3 hours from London (King's Cross). Rainfall 22·66 inches. Air bracing, clear, and uncontaminated, from the moors and pine woods. Excellent water supply.

Waters.—Bromo-iodine waters, rich in the chlorides of sodium, calcium, and magnesium, with bromine and iodine.

Therapeutic indications.—Chronic articular and muscular rheumatism, gout, sciatica, and lumbago; neurasthenia, skin diseases, tuberculous diseases, gall-stones, and liver derangements, and diseases peculiar to women.

Baths.—Shower, lave, and local douches; inhalation, respiration, natural vapour, Russian and Berthollet vapour; Dowsing radiant heat, and light treatment, Nauheim, Aix massage douche, and electric treatment.

Hotel.—Victoria Hotel. *See also p.* 811.

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London	Westminster Hospital	A. E. Cope, M.D., 26, Bessborough Gardens, S.W.	Thursday ; 11
	St. Thomas's Hospital		Tuesday ; 10.30
	Tolmers Square Institute, Drummond St., N.W.	*J. Loane, M.R.C.P.*, 13, Great Alie Street, E.	Monday, Wed. ; 1
	Eastern Disp., Leman St.		Wednesday ; 11
	Christ Church Mission Hall, Shroton St., Marylebone	E. C. Greenwood, L.R.C.P., 19, St. John's Wood Park, N.W.	Friday ; 3
	St. Olave's and St. John's Institute, Tooley St., S.E.	V. A. Jaynes, M.R.C.S., 157, Jamaica Road, Bermondsey, S.E.	Wednesday ; 3
	New Hospital for Women, 144, Euston Road, N.W.	Miss M. Thorne, M.D., 148, Harley Street, W.	Friday ; 9
Birmingham	Priory Rooms, Upp. Priory	*(Vacant.)*	
Bristol	St. Peter's Hospital, Bristol	*G. S. Page, L.R.C.P.*, 78, Old Market Street	Wednesday ; 11
Cambridge	Addenbrooke's Hospital	Dr. F. Deighton, Hills Road	Wednesday ; 4
Cardiff	Roath Church Institute, Sun Street, Roath	Dr. H. A. Schölberg, University College	Tuesday ; 11
Leeds	Leeds General Infirmary	Dr. A. T. Bacon, Westfield, Hyde Park Rd.	*
Liverpool	17, Mulgrave Street	*Dr. N. E. Roberts*, 17, Mulgrave Street	Tuesday ; 3
Manchester	St. Mary's Hosp., Whitworth Street West, Manchester	John Scott, M.D., 249, Upper Brook Street	*
Newcastle	The Dispensary, Nelson St.	*F. Hawthorn, M.D.*, 6, Regent Terrace	Wednesday ; 3
Sheffield	Jessop Hospital for Women	Dr. P. E. Barber, 3, Clarkehouse Road	*
Aberdeen	The Public Dispensary	Dr. T. Fraser, 51, Elmbank Terrace	Wednesday ; 2.30
Dundee	Royal Infirmary	R. C. Buist, M.D., 166, Nethergate	Monday ; 2
Edinburgh	Marshall Street Dispensary	*J. B. Buist, M.D.*, 1, Clifton Terrace	Thursday ; 11
	Livingstone Dispensary, 39, Cowgate		Tuesday ; 3
	The Western Dispensary, Ponton Street		Thursday ; 3
	The Royal Public Dispensary	W. G. Robertson, M.D., 26, Minto Street	Wed. & Sat. ; 12
Glasgow	The Royal Infirmary	Dr. H. H. Borland, 571, Alexandra Parade, Denistown	Monday; 12 (Women) Thursday ; 12 (Men)
	The Western Infirmary	Dr. J. W. Nicol, 7, Kersland Terrace	Mon. & Thurs. ; 12
Belfast	City of Belfast Union Infirm.	Dr. J. McLiesh, 91, Great Victoria Street	*
Cork	Cork District Hospital	W. E. A. Cummins, M.D., 17, St. Patrick's Place	*
Dublin	45, Upper Sackville Street	*Dr. A. N. Montgomery*, 45, Upper Sackville Street	Tuesday, Friday ; 10
Galway	The Dispensary	Dr. M. J. McDonogh, Flood Street	*

(a.) Candidates for Certificates should communicate with the authorized Teacher to learn the dates of his or her regular courses of instruction. * *Days and hours arranged each Session.*

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British Association for the Advancement of Science—Burlington House, Piccadilly, W.
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British Dental Association—Secretary, 19, Hanover Square, W.
British Medical Association—6, Catherine Street, Strand, W.C. (temporary).
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British Orthopædic Society—Hon. Sec., 20, Bedford Square, W.C.
Chemical Society—Burlington House, Piccadilly, W.
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Epsom College (Royal Medical Foundation)—Sec., 37, Soho Square, W.
Geological Society of London—Burlington House, Piccadilly, W.
Harveian Society of London—Stafford Rooms, Tichborne Street, W.
Hunterian Society, The London Institution—Finsbury Circus, E.C.
Imperial Cancer Research Fund—Examination Hall, Victoria Embankment, W.C.
Imperial Vaccination League—53, Berners Street, W.
Incorporated Society of Medical Officers of Health—1, Upper Montague Street, Russell Square, W.C.
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Linnæan Society—Burlington House, Piccadilly, W.
Lister Institute of Preventive Medicine, Chelsea Bridge Road, S.W.
London Hospital Medical Society—Mile End, E.
Medical Defence Union, Lim.—4, Trafalgar Square, W.C.
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Medico-Psychological Association—Sec., 11, Chandos Street, W.
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Poor Law Medical Officers' Association—Sec., 243, Hackney Road, N.E.
Psychical Research, Society for—20, Hanover Square, W.
Röntgen Society—Hon. Sec., F. H. Low, M.B., 2, Henrietta Street, W.
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Royal Statistical Society—9, Adelphi Terrace, W.C.
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Society for the Study of Inebriety—Hon. Sec., T. N. Kelynack, M.D., 120, Harley Street, W.
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Chemist and Druggist—Weekly 4d., 10/- per ann.—42, Cannon Street, E.C.
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Dental Surgeon—Weekly 3d., 13/- per annum—Baillière, 8, Henrietta Street, W.C.
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Knowledge and Scientific News—Monthly 6d.—27, Chancery Lane, W.C.
Lancet—Weekly 7d.—423, 424, Strand, W.C.
Laryngology, Rhinology, and Otology, Journal of—Monthly 2/-—Adlard & Son, Bartholomew Close, E.C.
Laryngoscope, The—Monthly 1/6—Baillière, 8, Henrietta Street, W.C.
Linnæan Society, Journal of—Irregular, 14, Henrietta Street, W.C.
Linnæan Society, Transactions—Irregular, Price varies—Burlington House, Piccadilly, W.
Liverpool Medico-Chirurgical Journal—Half-yearly, 2/6 each—H. K. Lewis, 136, Gower Street, W.C.
Medical Annual—Annually 8/6—John Wright & Co., Bristol
Medical Chronicle—Monthly 1/6, 12/6 per annum—27, St. Ann Street, Manchester
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Nursing, British Journal of—Weekly 1d.—11, Adam Street, W.C.
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Nursing Notes—Monthly 2d.—12, Buckingham Street, W.C.
Nursing Times—Weekly 1d.—Macmillan & Co., Lim., St. Martin's Street, W.C.
Obstetrics and Gynæcology of the British Empire, Journal of—Monthly 2/6 Sherratt & Hughes, 60, Chandos Street, W.C.
Odontological Society, Transactions of—Monthly, during Sessions, 2/6—83 to 89, Great Titchfield Street, W.
Ophthalmic Hospital Reports, The Royal London—Yearly 5/-—J. & A. Churchill, 7, Great Marlborough Street, W.
Ophthalmic Review—Monthly 1/6—60, Chandos Street, W.C.
Ophthalmological Society's Transactions—Yearly 12/6—J. & A. Churchill, 7, Great Marlborough Street, W.
Ophthalmoscope—Monthly 1/-—Pulman & Sons, Lim., 24, Thayer Street, W.
Otological Society of the United Kingdom, Transactions of—Yearly 10/- J. & A. Churchill, 7, Great Marlborough Street, W.
Pediatrics, Archives of—Monthly, 14/- per annum—Sidney Appleton, 25, Bedford Street, Covent Garden, W.C.
Pharmaceutical Journal—Weekly 6d.—72, Great Russell Street, W.C.
Pharmacy, Monthly Magazine of—Monthly 6d.—12 & 16, Coleman St., E.C.
Physiology, Journal of—Quarterly, 21/- per volume—Fetter Lane, E.C.
Polyclinic—Monthly 6d.—Bale, Sons & Danielsson, Lim., Great Titchfield Street, W.
Practitioner—Monthly 2/-—The Practitioner, Lim., 149, Strand, W.C.
Prescriber—Monthly 4½d., post free, 3/6 per annum—137, George Street, Edinburgh

Preventive Medicine, Journal of—Monthly 2/-—83, Great Titchfield St., W.
Progressive Medicine—Quarterly 12/-—129, Shaftesbury Avenue, W.C.
Psychical Research Society, Proceedings of the—Occasionally—20, Hanover Square, W.
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Royal Society of Medicine, Proceedings of the—Monthly 7/6—Longmans, Green, & Co., 39, Paternoster Row, E.C.
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It is easier to make a note of a thing than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

NOTES.

Copy here any formula or fact you wish to keep for reference. (These pages are indexed under the word "Notes.")

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See full Illustrated Announcement on page xxxvii.

NOTES

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NOTES.

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See full announcement on page xxxi.

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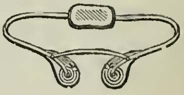

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SEE PAGE L.

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A, *when Established;* B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

Those marked with an asterisk (*) in the E column have not sent revised figures for 1907.

Title, Etc., of Office.	A	B	C	D	E
					£
Abstainers and General, Life and Accident, Edmund St., Birmingham. *Act. and Sec.*, R. A. Craig, A.I.A. .. .. P	1883	40/11	55/10	82/3	324,164
Alliance, Fire, Life, Marine and Accident, Bartholomew Lane, E.C. *Gen. Man.*, Robert Lewis .. .. P	1824	48/9	64/5	90/9	11,640,753
Atlas, Fire and Life, 92, Cheapside, E.C. *Act.*, Robert Cross. *Gen. Man.*, Saml. J. Pipkin .. .. .. P	1808	49/3	63/7	88/8	1,935,652
Britannic Assurance Co., Ltd. (*formerly called* British Workman's & General), Life and Endowments, Broad Street Corner, Birmingham. *Chairman*, F. T. Jefferson, J.P. *Sec.*, S. J. Port, F.C.I.S. Further particulars see page 732 .. P	1866	48/6	65/2	94/-	1,751,755
British Equitable. Life, Fire, Accident, Burglary, Employers' Liability 1, 2, 3, Queen St. Place, E.C. *Man.*, Basil May, F.I.A. Further particulars see page 730 .. .. .. P	1854	48/8	64/11	91/9	1,758,250
British Homes Assurance Corporation, Ltd., 6, Paul Street, Finsbury, E.C., Life Assurance and House Purchase. *Man. Director*, M. Gregory. Further particulars see page 734	1897	49/1	66/2	94/7	350,000
Caledonian, Fire, Life, Accident, 19, George St., Edinburgh. *Gen. Man.*, Robert Chapman. London Offices, 82, King William Street, E.C., and 14, Waterloo Place, S.W. P	1805	48/9	64/6	88/6	2,524,007
City of Glasgow, Life, 30, Renfield Street, Glasgow. *Gen. Man.*, William S. Nicol. London Office, 12, King William St., E.C. *Lon. Man.*, J. D. Milne .. P	1838	48/9	64/6	89/10	2,882,755
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act. & Man.*, F. B. Wyatt. *Sec.*, W. N. Neale. Further particulars see page 731 .. .. M	1829	46/4	62/2	87/4	4,242,820
Clerical, Medical and General, Life, 15, St. James's Square, and 1, King William Street, E.C. *Act.* and *Sec.*, A. D. Besant P	1824	48/7	66/9	96/3	4,529,555
Colonial Mutual, Life and Annuity, 33, Poultry. *Man.*, Arthur E. Gibbs .. M	1873	47/4	63/2	89/9	2,982,018
Commercial Union, Fire, Life and Accident, 24, 25, and 26, Cornhill, E.C. *Act.*, H. C. Thiselton .. .. .. P	1861	49/5	64/2	87/8	3,195,297
Co-operative, Life, Fidelity, and Fire, Long Millgate, Manchester. *Sec.*, James Odgers. Further particulars see page 733 P	1867	45/8	61/5	88/4	*75,871
Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. P	1807	50/8	65/5	91/4	2,376,967
Economic, Life, 6, New Bridge Street, Blackfriars. *Act.* and *Sec.*, G. Todd, M.A., F.I.A. .. .. .. M	1823	44/4	59/6	85/5	4,444,653
Edinburgh, Life, Endowments, and Annuities, 22, George Street, Edinburgh. *Man. and Act.*, A Hewat, *P.F.A.*, F.I.A. *Sec.*, T. M. Gardiner. London, 11, King William Street, E.C. *Sec.*, J. J. Bisgood P	1823	47/11	64/2	90/2	4,111,163
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man.*, Albert G. Scott. *Act.* and *Sec.*, J. Douglas Watson, F.I.A. P	1839	47/1	62/8	87/9	2,722,024

A, *when Established;* B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

TITLE, ETC., OF OFFICE.	A	B	C	D	E
					£
Equitable Life Assurance Society, Mansion House Street, E.C. *Act.* and *Sec.*, G. J. Lidstone .. .. .. M	1762	53/5	67/11	90/7	4,910,346
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, W. P. Phelps, F.I.A., M.A. .. .. .. P	1844	48/10	64/6	90/9	4,284,402
Friends' Provident, Life, Annuities, etc., Bradford, Yorkshire. *Sec.*, William H. Gregory. *Act.*, Alfd. Moorhouse, F.I.A. M	1832	48/-	64/-	89/7	3,321,513
General Accident Fire and Life, Perth, Scotland. *Gen. Man.*, F. Norie-Miller, J.P. P	1885	49/2	64/11	91/3	4,328
General, Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. Further particulars see page 732 P	1837	49/10	65/4	92/8	2,016,893
Gresham, Life, St. Mildred's House, E.C. *Gen. Man.* and *Sec.*, James H. Scott P	1848	48/2	64/1	91/5	9,326,891
Guardian, Fire, Life, Accident, and Burglary, 11, Lombard St., E.C., & 21, Fleet St. *Sec.*, T. G. C. Browne. *Act.*, Ernest Woods P	1821	48/10	64/6	89/3	4,034,763
Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Act.*, J. E. Faulks .. P	1823	49/4	64/10	91/-	*4 304,707
Law Union and Crown, Life, Fire, Accident, Annuities, Burglary, etc., 126, Chancery Lane. *Gen. Man.*, A. Mackay P	1825	48/4	64/-	89/10	4,761,518
Legal and General, Life, and Annuities, 10, Fleet Street, E.C. *Act.* and *Man.*, E. Colquhoun .. .. .. P	1836	50/9	65/11	90/9	*4,896,818
Life Association of Scotland, 82, Princes St., Edinburgh. *Man.*, John Turnbull Smith. *Sec.*, J. Sharp. London Office, 18, Bishopsgate Street Within, E.C. *Sec.*, J. C. Wardrop .. .. .. P	1838	50/-	65/4	93/4	5,631,466
Liverpool and London and Globe, Fire, Life, Annuities, Accident, etc., 1, Dale St., Liverpool. *Gen. Man.* and *Sec.*, A. G. Dent. London Office, 1, Cornhill, E.C. P	1836	49/10	65/9	91/3	5,395,825
London and Lancashire, Life, 66 and 67, Cornhill, E.C. *Gen. Man.*, W. P. Clirehugh. *Act.*, W. R. Hopkins, F.I.A. *Sec.*, G. W. Mannering .. .. .. P	1862	46/10	62/4	86/10	2,139,764
London Assurance Corporation, Fire, Life, and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes. *Act.*, A. G. Hemming .. .. P	1720	49/6	64/11	91/5	2,240,926
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Euston Square, N.W. *Sec.*, T. V. Cowling. *Gen. Man.*, Thos. Neill .. .. P	1881	48/7	64/9	93/4	819,201
London Life Association, Lim., 81, King William Street, E.C. *Act.* and *Man.*, C. D. Higham, F.I.A. .. M	1806	60/-	79/-	108/-	4,856,939
Marine and General Mutual, Life, and Marine, 14, Leadenhall Street, E.C. *Act.* and *Sec.*, S. Day, F.I.A. .. .. M	1852	48/10	65/11	91/11	1,480,500
Metropolitan Life, 13, Moorgate St., E.C. *Sec.*, Bernard Woods. *Act.*, H. J. Baker M	1835	49/9	66/4	92/-	2,174,797
Mutual Life Assoc. of Australasia, 5, Lothbury, Bank, E.C. *Sec.*, Alfred Gilbert M	1869	48/-	65/-	93/-	2,065,983
Mutual Life Insurance Co. of New York, 16, 17 and 18, Cornhill, E.C. *Gen. Man.*, J. H. Harrison Hogg. *Sec.*, T. Crawford M	1843	48/9	66/-	97/-	100,701,692
National Mutual Life, 39, King Street, Cheapside. *Act.* and *Man.*, Geoffrey Marks, F.I.A. *Sec.*, H. J. Lockwood. *Asst. Act.*, C. R. V. Coutts, F.I.A. M	1830	48/4	63/7	89/6	2,765,850
National Mutual Life Association of Australasia, Ltd., 5, Cheapside, E.C. *Man.*, John B. Gillison, F.I.A., F.F.A. Further particulars see page 733 M	1869	46/8	61/6	87/2	4,478,070

A, *when Established;* B, C, D, *Annual Premiums to Insure* £100 *on death, with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

TITLE, ETC., OF OFFICE.	A	B	C	D	E
					£
National Provident, 48, Gracechurch Street, E.C. *Act. & Sec.*, Lewis F. Hovil M	1835	50/2	66/3	91/1	6,500,000
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, T. J. Pulling. *Sec.*, Wm. R. Collinson, F.C.I.S. .. .. .. M	1845	48/9	66/–	90/11	97,517,245
North British and Mercantile, Fire, Life, Burglary, and Annuities, 61, Threadneedle St., E.C., and 64, Princes St., Edinburgh. *Life Man.* and *Act.*, London, H. Cockburn. *Jt. Man.*, D. C. Haldeman. *Sec.*, R. Carmichael. **Further particulars see page 729** .. .. .. P	1809	49/10	66/1	91/11	14,124,573
Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E. Wilson .. P	1836	49/–	64/8	90/10	4,638,314
Norwich Union, Life, Norwich. *Gen. Man.* and *Act.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C.	1808	45/8	59/6	85/3	7,421,990
Pearl, Life, London Bridge, City, E.C. *Man.*, P. J. Foley .. .. .. P	1864	49/–	65/–	92/–	3,142,461
Pelican & British Empire, Life, 70, Lombard Street, 57, Charing Cross. *Gen. Man.*, G. H. Ryan, F.I.A. .. .. P	1797	48/11	64/7	90/8	5,253,098
Provident Clerks & General Mutual Life Assurance Association, 27 & 29, Moorgate St., E.C. *Sec.*, John E. Gwyer M	1840	46/4	62/8	92/2	2,450,000
Prudential (Ordinary), Life, Holborn Bars. *Sec.*, D. W. Stable. **Further particulars see page 730** .. .. P	1848	49/6	65/11	91/11	35,204,193
Refuge, Life, Oxford St., Manchester. *Joint Mans.*, R. Wm. Green & John W. Proctor. London Office, 29, New Bridge Street P	1864	49/3	65/9	91/9	4,603,301
Rock, Life and Endowments, Educational and Life Annuities, Investment, etc., 15, New Bridge Street, E.C. *Act.*, G. S. Crisford, F.I.A. *Sec.*, R. Stirling P	1806	42/5	55/11	81/2	2,454,702
Royal Exchange Assurance, Fire, Life, Annuities, etc., Royal Exchange, and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. **Further particulars see page lxxvii** P	1720	49/–	64/9	90/2	3,317,018
Royal, Fire, Life, and Annuities, Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard Street. *Sec.*, John H. Croft .. P	1845	49/9	64/1	88/3	9,373,635
Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. *Sec.*, W. E. Wright P	1864	48/8	64/8	90/6	1,094,140
Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, W. Hutton. *Sec.*, C. Guthrie .. .. .. M	1826	51/9	66/3	90/1	4,917,328
Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. *Man. & Act.*, G. M. Low. *Sec.*, J. J. McLauchlan. London Office, 19, King William St., E.C. *Sec.*, F. R. Leftwich .. .. M	1831	50/–	65/5	90/6	5,530,364
Scottish Life, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 13, Clements Lane, E.C. *Sec.*, George Struthers .. .. .. P	1881	49/5	64/6	90/5	1,123,125
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, H. E. Marriott. London Office, 8, King Street, E.C. *Man.*, C. E. M. Hudson .. .. P	1876	40/8	54/7	79/7	663,565
Scottish Provident, Life & Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, J. G. Watson. *Joint Secs.*, J. Lamb and R. T. Boothby. *Asst. Sec.*, C. W. Thomson. *Act.*, W. G. Walton. London Offices, 3, Lombard Street, E.C., and 17, Pall Mall, S.W. .. .. .. M	1837	42/4	56/6	83/2	14,000,000

A, *When Established ;* B, C, D, *Annual Premiums to Insure £*100 *on death, with Profits, at the ag of* 30, 40, *and* 50 ; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices ;* P, *Proprietary Offices.*

TITLE, ETC., OF OFFICE.	A	B	C	D	E
Scottish Temperance, Life & Accident, 105, St. Vincent Street, Glasgow. *Manager*, Adam K. Rodger. London, 2, 3 & 4, Cheapside. *Man.*, W. A. Bowie. *Reduced Rates to Abstainers* .. .. P	1883	48/6	63/9	89/10	1,203,473
Scottish Union & National, Fire, Life, Accident, Pensions, Annuities, etc., 35, St. Andrew Sq., Edinburgh. *Gen. Man.*, J. A. Cook. London Office, 3, King William Street, E.C. *Sec.*, William G. Glennie P	1824	50/6	65/6	91/–	4,453,615
Scottish Widows' Fund, Life & Survivorship, 9, St. Andrew Square, Edinburgh. *Man. & Act.*, N. B. Gunn. *Sec.*, J. G. C. Cheyne. London Offices, 28, Cornhill, E.C., and 5, Waterloo Place, S.W. *Sec.*, J. W. Miller M	1815	51/9	66/3	90/7	18,309,483
Standard Life, 3, George Street, Edinburgh. *Man.*, Leonard W. Dickson. London Offices, 83, King William St., and 3, Pall Mall East. *Sec.*, J. H. W. Rolland P	1825	48/11	64/5	89/-	11,644,530
Star, Life, Annuities, Endowments, 32, Moorgate St., City. *Act. & Sec.*, .. P	1843	48/9	64/11	90/6	6,601,701
Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. G. Salmon, F.I.A. *Sec. & Gen. Man.*, E. Linnell .. .. P	1810	49/2	66/6	94/2	6,629,388
Sun Life of Canada, Life and Annuities, 93, Queen Victoria Street, E.C. *Man.*, Geo. E. Reid .. .. P	1865	48/6	65/2	94/1	5,000,000
United Kingdom Temp., etc., Life, 196, Strand, W.C. *Sec.*, Johnson Brooks M	1840	48/10	64/11	90/6	8,500,000
University, Life, 25, Pall Mall, S.W. *Act.* and *Sec.*, R. Todhunter, M A P	1825	49/11	65/4	91/5	903,901
Victoria Mutual, Life and Endowment, Memorial Hall Buildings, Farringdon St., E.C. *Sec.*, Arthur J. Cook, A.I.A. M	1860	49/3	65/7	93/–	153,579
Wesleyan and General, Life, Annuities, Sickness, Assurance Buildings, Steelhouse Lane, Birmingham. *Gen. Man.*, R. A. Hunt, F.S.S., A.I.A. London Office, 101, Finsbury Pavement, E.C. **Further particulars see page 732** M	1841	48/1	65/8	93/10	1,535,797
Yorkshire, Fire and Life, St. Helen's Sq., York. London Office, 2, Bank Buildings, Princes Street. **Further particulars see page 724** P	1824	49/1	64/9	91/7	1,535,797

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Medical Profession, and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £200,000.

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Assurance Company, Limited.

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ACCUMULATED FUNDS -	£1,829,729
PAID IN CLAIMS - - -	£3,416,778

LIFE - - - - -
FIRE - - - - -
ACCIDENT - - - -
BURGLARY - - - -
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2 & 3, THE SANCTUARY, WESTMINSTER, S.W.

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	£	s.	d.	£	s.	d.
25	20	1	8	27	3	4
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35	26	10	0	40	1	8
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BRITANNIC

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CLAIMS PAID	....	£5,800,000

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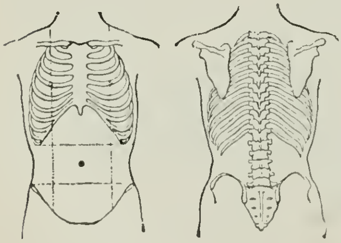

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POST-GRADUATE COLLEGE

(WEST LONDON HOSPITAL),

HAMMERSMITH ROAD, W.

THE HOSPITAL contains 160 beds, all of which are in daily occupation. Over 2200 In-Patients were treated in the Hospital during last year; while the attendances of Out-Patients exceeded 100,000.

The Physicians and Surgeons attend daily at 2.30 p.m. Instruction is given by the Assistant Physicians and Surgeons in the O.P. Department daily at 2.15 p.m.; and there are Special Departments for the Diseases of the Eye, Ear, Throat and Nose, Women, and for Orthopædic Surgery. Post-Graduate Lectures are delivered daily, except Saturdays, at 5 o'clock in the Lecture Room. Special Classes are frequently held in different subjects.

No Junior Students are admitted to the Practice of the Hospital. A Special Building containing **a Reading and Writing Room** is provided for the use of Post-Graduates.

A fully-equipped **Clinical Investigation Laboratory and an X-Ray Department** have been established at the Hospital. A Special Class in Bacteriology is held about the beginning of each month by the Pathologist. A Certificate signed by the Staff is awarded after three months' Hospital Attendance.

The Fee for the Hospital Practice, including the Post-Graduate Lectures, is **£5 5s.** for Three Months; **£8 8s.** for Six Months; and **£12 12s.** for One Year. Full particulars can be obtained from the undersigned at the Hospital.

L. A. BIDWELL, Dean.

LADY MARGARET HOSPITAL (FRUITARIAN)

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Treasurer: Rt. Hon. Lord LLANGATTOCK. Warden: JOSIAH OLDFIELD, D.C.L., M.R.C.S., 5, Harley St., W. Hon. Sec.: The Hon. FLORENCE COLBORNE.

This Hospital was founded in 1903, and has now 20 beds, together with 2 open air verandahs, with 4 and 6 beds apiece. The diet is purely fruitarian (fruits, cereals, nuts, vegetables, eggs, milk, butter, cheese), and each patient is dieted according to his needs.

Medical and surgical cases admitted, but no infectious cases received. Operations, Saturdays, at 10 a.m.

This Hospital is supported by voluntary contributions, and every patient is required to pay a little according to ability.

There is a Scholarship of an annual value of £50 open to students of medicine, and given for the purpose of promoting the study of the value of diet in health and in disease.

The Out-patient Department is in London, S.E.; the In-patient at Bromley (half-an-hour away from the Out-patient department). The Country department near Sittingbourne, and the Seaside department at Broadstairs.

There are paying wards attached to each department, and any profits are given to the Hospital.

THE VICTORIA

UNIVERSITY OF MANCHESTER.

FACULTY OF MEDICINE.

CURRICULUM.—Complete Courses of instruction are offered to Students (Men and Women) preparing for Degrees in Medicine and Surgery, and in Science, for Degrees and Diplomas in Dentistry, for the qualifications of the Conjoint Board and other Licensing Bodies, and for Public Health and Pharmaceutical Diplomas.

The University contains spacious and well-equipped Laboratories in all departments of Medicine and Science. For Women Students a separate Laboratory for Practical Anatomy and Special Common Rooms are provided.

The Prospectus of the Medical Faculty and the special Prospectuses for the following departments: Dental, Public Health, Pharmaceutical, will be forwarded on application to the REGISTRAR.

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INVALID TRANSPORT SERVICE.

(under the patronage of many leading physicians and surgeons), for the conveyance of sick and injured patients (infectious cases excepted) to and from all parts. The Association has a fully-trained Staff and all necessary appliances.—For particulars apply to the Transport Manager, St. John's Gate, Clerkenwell, London, E.C.

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UNIVERSITY of ABERDEEN

Founded 1494.

FACULTY OF MEDICINE.

THE Degrees in medicine granted by the University are—Bachelor of Medicine, Bachelor of Surgery, Doctor of Medicine, and Master of Surgery. They are conferred only after Examination, and only on Students of the University. Women are now admitted to instruction and graduation on the same footing as men. A Diploma in Public Health is conferred after Examination on Graduates in Medicine of any University in the United Kingdom.

The Faculty of Medicine embraces twelve chairs, from which instruction is given in all the main branches of Medical Science.

Practical Classes in connection with these chairs are conducted by the Professors and Assistants in Laboratories furnished with all the necessary appliances; and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Instruction is also given in special departments of Medical Practice by Lecturers appointed by the University Court.

Clinical instruction is obtained in the Royal Infirmary, Royal Lunatic Asylum, the Sick Children's Hospital, the City (Fever) Hospital, the General Dispensary, and Lying-in and Vaccine Institutions, and the Ophthalmic Institutions.

Bursaries, Scholarships, Fellowships and Prizes, to the number of **50** and of the Annual Value of **£1183** may be held by Students in this Faculty.

The cost of Matriculation, Class and Hospital Fees for the whole curriculum, inclusive of the fees for the Degrees, is usually about **£150.**

A Prospectus of the Classes, Fees, &c., may be had on application to the Secretary of the Faculty of Medicine.

DAVID W. FINLAY, M.D., F.R.C.P., *Dean of Medical Faculty.*

RICHMOND, WHITWORTH, and . . . HARDWICKE HOSPITALS, DUBLIN.

THE SESSION 1907-8 commenced on TUESDAY, October 1st, 1907. These Hospitals for Surgical, Medical, and Fever cases respectively, contain nearly 300 beds.

PHYSICIANS—Sir J. T. Banks, K.C.B., M.D., LL.D., Physician to the King in Ireland; Late Regius Professor of Medicine, Univ. Dublin.
Joseph O'Carroll, M.D., Examiner in Medicine, Royal University.
J. B. Coleman, C.M.G., M.D., Examiner in Medicine, Conjoint Board.
R. Travers Smith, M.D., Examiner, Conjoint Board.

SURGEONS—Sir William Thomson, C.B., F.R.C.S.; Surgeon to the King, and late Surgeon to the Lord Lieutenant in Ireland; late Examiner in Surgery, Army Medical Department.
Sir Thornley Stoker, Ex-President R.C.S.; late Fellow and Examiner in Surgery, Royal University; Surgeon to Swift's Hospital for Lunatics.
Sir Thomas Myles, M.D., F.R.C.S., late President Royal College of Surgeons.

OPHTHALMIC SURGEON—Robert D. Joyce, M.R.C.S.E., L.R.C.P. Lond.

GYNÆCOLOGIST—T. Henry Wilson, Examiner in Midwifery, Conjoint Board.

Apply to Sir W. THOMSON, C.B., F.R.C.S., Treasurer, 54, St. Stephen's Green, E.; *or to* Dr. R. TRAVERS SMITH, 20, Lower Fitzwilliam Street, Dublin.

UNIVERSITY COLLEGE OF SOUTH WALES and MONMOUTHSHIRE, CARDIFF.

(A Constituent College of the University of Wales.)

FACULTY OF MEDICINE.

Students may spend three out of the five years of their medical study at this College. The courses of instruction given are recognised as qualifying for the Examinations of the Universities, Royal Colleges, and other licensing bodies of Great Britain and Ireland. Medical men preparing for a Diploma in Public Health and Hygiene can attend complete courses of instruction in these subjects. All classes are open to Women Students. The composition fee for students preparing for the Preliminary Scientific and Intermediate examination in Medicine of the University of London is £57 10s. The composition fee for the classes qualifying for the first and second examinations of the Conjoint Board is £41 10s. The composition fee for the D.P.H. Course is £21. Hospital instruction may be taken at the Cardiff Infirmary, which is situated within five minutes' walk of the College. A course of Lectures to Midwives adapted to the requirements of the Central Midwives Board, under the Midwives Act, was commenced in October, 1904. The Lectures are suitable both for Pupil-Midwives and Practising-Midwives as well as for Nurses who desire to enter for the Examination for Certification under the Act. A prospectus containing all information regarding classes, fees and entrance scholarships may be obtained by application to the Registrar of the College.

Physics—Prof. A. L. Selby, M.A., assisted by J. H. Shaxby, B.Sc., and D. E. Thomas, B.A., B.Sc.
Chemistry—Prof. C. M. Thompson, M.A., D.Sc., assisted by Assist.-Prof. E. P. Perman, D.Sc., and Robert D. Abell, D.Sc.
Zoology—Prof. W. N. Parker, Ph.D., assisted by T. H. Burlend, B.A., B.Sc.
Botany—Prof. A. H. Trow, D.Sc., assisted by M. Y. Orr
Anatomy—Prof. David Hepburn, M.D., C.M., M.R.C.S., F.R.S.Ed., assisted by Evelyn John Evatt, M.B.
Applied Anatomy—Evelyn John Evatt, M.B., B.S.
Physiology—Prof. John Berry Haycraft, M.D., D.Sc. assisted by F. W. Lamb, B.A., M.D., D.P.H.
Pharmacology and Therapeutics—W. Mitchell Stevens, M.D., M.R.C.P.
Bacteriology—H. A. Schölberg, M.B., D.P.H.
Public Health and Hygiene—Edward Walford, M.D., D.P.H., and William Williams, M.A., M.D., D.P.H.
Hygienic Chemistry—J. H. Sugden, M.Sc., F.I.C.
Midwifery (for Midwives)—E. J. Maclean, M.D., M.R.C.P.
Vaccination—H. A. Schölberg, M.B.Lond.

J. AUSTIN JENKINS, B.A., Registrar of the College.
DAVID HEPBURN, M.D., C.M., M.R.C.S., Dean of the Faculty of Medicine.

ST. ANDREWS UNIVERSITY.

FACULTY OF MEDICINE.

The WINTER SESSION, 1907-1908, commenced MONDAY, October 14, 1907.

UNITED COLLEGE, ST. ANDREWS.

Physics—Prof. Butler
Chemistry—Prof. Purdie
Practical Chemistry—Prof. Purdie
Zoology—Prof. M'Intosh
Practical Zoology—Prof. M'Intosh
Anatomy—Prof. Musgrove
Practical Anatomy—Prof. Musgrove
Physiology—Dr. Fraser Harris
Practical Physiology—Dr. Fraser Harris

UNIVERSITY COLLEGE, DUNDEE.

Physics—Prof. Peddie
Chemistry—Prof. Walker
Practical Chemistry—Prof. Walker
Zoology—Prof. Thompson
Practical Zoology—Prof. Thompson
Botany—Prof. Geddes
Practical Botany—Prof. Geddes
Anatomy—Principal Mackay
Practical Anatomy—Principal Mackay
Regional Anatomy—Lt.-Col. Lamont, I.M.S.
Physiology—Prof. Waymouth Reid
Practical Physiology—Prof. Waymouth Reid
Pharmacology and Materia Medica—Prof. Marshall
Pathology—Prof. Sutherland
Systematic Medicine—Prof. Stalker
Systematic Surgery—Prof. MacEwan
Midwifery & Diseases of Women—Prof. Kynoch
Medical Jurisprudence and Public Health—Dr. Templeman
Clinical Medicine—Prof. Stalker & Dr. Mackie Whyte
Clinical Surgery—Prof. MacEwan & Mr. Greig
Operative Surgery—Prof. MacEwan
Clinical Gynæcology—Prof. Kynoch & Dr. Buist
Diseases of Children—Prof. Stalker & Mr. Greig
Clinical Ophthalmology—Dr. McGillivray
Diseases of Nose, Throat and Ear—Dr. Guild
Mental Diseases—Dr. Rorie and Dr. Mackenzie
Medical Tutorial Classes—Dr. Fraser
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Post-Mortem Examinations at Dundee Royal Infirmary

Attendance on Cases of Labour and Instruction in Vaccination can also be obtained.

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Royal College of Surgeons of Edinburgh

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Copies of the Regulations for the Fellowship, Licence, and Licence in Dental Surgery, with dates of Examinations, Curricula, etc., for the year 1907, 1908, are now ready, and may be had on application to—

JAMES ROBERTSON, Solicitor, 54, GEORGE SQUARE, EDINBURGH,
Clerk to the College.

UNIVERSITY OF DURHAM

COLLEGE OF MEDICINE, NEWCASTLE-ON-TYNE.

Degrees in Medicine, Surgery, and Hygiene.—Six Degrees and one Diploma are conferred by the University of Durham—*viz.*, the Degrees of Bachelor in Medicine, Doctor in Medicine, Bachelor in Surgery, and Master in Surgery; Bachelor in Hygiene, and Doctor in Hygiene; and Diploma in Public Health. These Degrees are open to Men and Women.

Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree of M.D. after examination only.

The first three Examinations for the Degree of M.B. may be passed prior to the commencement of attendance at Newcastle.

A candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum. Students who have satisfied the requirements of the General Medical Council as regards Registration, in some Examination other than the Durham Matriculation, or its equivalent, may enter on a course of study for a degree in Medicine upon satisfying the Examiners of the University of Durham in any *three* of the subjects of the Matriculation Examination, provided that one of them at least is a language other than English. In the case of a Student who spends only one year at Newcastle, the necessary subjects of the Matriculation Examination must be passed at least 12 months previously to the candidate's entry for his Final Examination for the Degree.

Students can complete, at the University of Durham College of Medicine, Newcastle-upon-Tyne, the entire course of professional study required for the above degrees and for the Diploma in Public Health; also for the examinations of the Royal Colleges of Physicians and Surgeons, and for the Army and Navy Examination Boards.

A Dental curriculum is provided.

All information, together with Examination Papers, etc., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, which may be obtained from the Secretary at the College.

Scholarships, &c.—University of Durham Scholarship. value £100, for proficiency in Arts, awarded annually to full students in their first year only. The Pears Scholarship—value £150—for proficiency in Arts. The Masonic Scholarship—value £45—for proficiency in Arts. Dickinson Scholarship—value the interest of £400, and a Gold Medal—for Medicine, Surgery, Midwifery, and Pathology. Tulloch Scholarship—value the interest of £400—for Anatomy, Physiology. and Chemistry. Charlton Scholarship—value the interest of £700—for Medicine. Gibb Scholarship—value the interest of £500—for Pathology. Luke Armstrong Scholarship—interest on £680—for Comparative Pathology. Stephen Scott Scholarship—interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, bequeathed the sum of £4000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize—value the interest of £225—for Midwifery and Diseases of Women and Children. The Turnbull Prize and Medal—for Surface Anatomy. The Goyder Memorial Scholarship (at the Infirmary)—value the interest of £325—for Clinical Medicine and Clinical Surgery. At the end of each Session a Prize of Books is awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors, and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks, and Dressers are appointed every three months.

The Royal Victoria Infirmary contains over 400 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers, by the Pathologist; Practical Midwifery can be studied at the Newcastle Lying-in Hospital, where there is an Out-door Practice of about 1000 cases annually.

FEES.

(*a*) A composition Ticket for Lectures at the College may be obtained—

I.—By payment of 72 guineas on entrance.

II.—By payment of 46 guineas at the commencement of the First Year, and 36 guineas at the commencement of the Second Year.

III.—By three annual instalments of 36, 31, and 20 guineas respectively, at the commencement of the Sessional year.

(*b*) Fees for attendance on Hospital Practice:—

	£	s.	d.
For 3 months' Medical and Surgical Practice	5	5	0
,, 6 ,, ,, ,, ,, ...	8	8	0
,, 1 year's ,, ,, ,, ...	12	12	0
,, Perpetual ,, ,, ,, ...	26	5	0

Or by three instalments at the commencement of the Sessional year, *viz.*, First year, 12 guineas; Second year, 10 guineas; Third year, 6 guineas. Or by two instalments —First year, 14 guineas; Second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Victoria Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

(*c*) Single courses of Lectures, 5 guineas.

(*d*) A Composition Ticket for the courses of Lectures and Practical work of the first two years of the curriculum, may be obtained by the payment of 40 guineas on entrance.

Fees for Lectures, etc., at the College must be paid to the Secretary, and Fees for Hospital Practice to Dr. Thomas Beattie at the time of entry.

Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

UNIVERSITY OF EDINBURGH.

SESSION 1908—1909.

Principal—Sir WILLIAM TURNER, K.C.B., D.C.L., LL.D., M.B., etc.

The WINTER SESSION opens on 1st October, and closes on 19th March; the SUMMER SESSION opens on 1st May, and closes about the middle of July.

FACULTY OF MEDICINE.

Dean—Professor D. J. CUNNINGHAM, D.C.L., LL.D., M.D., D.Sc.

The Faculty embraces fourteen Chairs and sixteen Lectureships; and attached to these Chairs are about thirty Assistants and Demonstrators. Instruction is given in all the main branches of Medical Science, viz.:—

PROFESSORS.

Chemistry—Alex. Crum Brown, M.D., D.Sc., LL.D.
Zoology—J. Cossar Ewart, M.D.
Botany—Isaac Bayley Balfour, M.D., D.Sc.
Physics—J. G. MacGregor, D.Sc., LL.D.
Anatomy—D. J. Cunningham, M.D., D.Sc., LL.D.
Physiology—E. A. Schäfer, LL.D.
Materia Medica—Sir Thomas R. Fraser, M.D., LL.D.
Pathology—William S. Greenfield, M.D.
Forensic Medicine—H. Harvey Littlejohn, M.D., LL.D.
Public Health—C. Hunter Stewart, M.B., D.Sc.
Medicine—John Wyllie, M.D., LL.D.
Surgery—John Chiene, C.B., M.D.
Midwifery—Sir J. Halliday Croom, M.D.
Clinical Surgery—Vacant.
Clinical Medicine—Sir Thomas R. Fraser, M.D., Wm. S. Greenfield, M.D., John Wyllie, M.D.

UNIVERSITY LECTURERS.

Mental Diseases—T. S. Clouston, M.D.
Diseases of the Eye—George Mackay, M.D.
Gynæcology—A. H. F. Barbour, M.D.
Clinical Instruction on Diseases of Children—G. H. Melville Dunlop, M.D., and Staff of Royal Hospital for Sick Children
Embryology and Vertebrate Zoology—J. Beard, D.Sc.
Anatomy—D. Waterston, M.D.
Applied Anatomy—Harold J. Stiles, M.B., C.M.
Histology—P. T. Herring, M.D.
Physiological Chemistry—W. Cramer, Ph.D., D.Sc.
Experimental Physiology—Sutherland Simpson, M.D., D.Sc.
Experimental Pharmacology—W. C. Sillar, M.D., B.Sc.
Pathological Bacteriology—W. E. Carnegie Dickson, M.D., B.Sc.
Physics—C. G. Knott, M.A., D.Sc.
Diseases of the Larynx, Ear, and Nose—A. Logan Turner, M.D.
Tropical Diseases—Vacant
Medical Entomology and Protozoology—J. H. Ashworth, D.Sc.
Tropical Hygiene—J. B. Young, M.B., D.Sc. (conjointly with Professor)
Diseases of the Skin—Norman Walker, M.D.
Clinical Instruction in Infectious Fevers—J. O. Affleck, M.D., and Claude B. Ker, M.D.
Practical Anæsthetics—T. D. Luke, M.B.

Practical Instruction is afforded, under the superintendence of the Professors, in Laboratories with the necessary appliances, and in Tutorial and Practical classes connected with the above Chairs, and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Opportunities for Hospital Practice are afforded at the Royal Infirmary, the Hospital for Sick Children, Maternity Hospital, the City Fever Hospital, and the Asylum for the Insane. Upwards of 2,016 beds are available for the Clinical Instruction of Students of the University.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz.: Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.).

The minimum Class Fees for M.B. and Ch.B., including Hospital Fee (£12), amount to about £115, and the Matriculation and Examination Fees to £28 7s. An additional Fee of £10 10s. is payable by those who proceed to M.D., and £10 10s. by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3,600, and that of the other Bursaries, etc., tenable by students of Medicine, amounts to about £1,820.

Instruction is also given in Public Health, and the degrees of B.Sc. and D.Sc. in Public Health are conferred by the University.

Residences for Students, Graduates, and others, situated within easy reach of the University, afford excellent board and lodging on very moderate terms.

Further information as to Matriculation, the Curricula of Study for Degrees, etc., may be obtained from the Dean of the Faculty of Medicine; and for Degrees in the Faculties of Arts, Science, Divinity, Law, and Music, from the Deans of these Faculties, or from the Clerk of Senatus; and full details are given in the University Calendar, published by James Thin, 55, South Bridge. Price, by Post, 3s. 6d.

The Preliminary and Degree Examination Papers in each of the Faculties are also published by Mr. James Thin, viz., Arts and Science Preliminary Papers, and Bursary Papers, 1s.; Medical Preliminary Papers, 6d; Degree Papers—Arts, 1s.; Science, 9d.; Divinity, Law, Medicine, and Music, 6d. each.

By Authority of the Senatus,

Oct. 1907. L. J. GRANT, *Secretary of Senatus.*

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IN this Hospital (with over 900 beds in use) a portion of the beds is set apart for Clinical Instruction by the Professors of the University of Edinburgh. Courses of Clinical Medicine and Surgery are also given by the ordinary Physicians and Surgeons. Three Wards are specially set apart for the Clinical Instruction of Women Students. Special Instruction is given in the Medical Department on the Diseases of Women, Physical Diagnosis, and Diseases of the Skin; and in the Surgical Department on Diseases of the Eye, the Ear, and the Larynx. Separate Wards are devoted to Venereal Diseases, Diseases of Women, and Diseases of the Eye, Ear and Throat, and Skin, also to cases of Incidental Delirium or Insanity. Post-mortem Examinations are conducted in the Anatomical Theatre by the Pathologist, who also gives practical instruction in Pathological Anatomy and Histology.

Medical Department.

Consulting Physicians—Dr. Claud Muirhead; Dr. J. O. Affleck; Dr. Andrew Smart; Dr. Alex. James.

Consulting Gynæcologists—Sir J. Halliday Croom; Emeritus Professor Sir A. R. Simpson.

Consulting Physician for Diseases of the Skin—Dr. Allan Jamieson.

Professors of Clinical Medicine—Sir T. R. Fraser; Dr. W. S. Greenfield; Dr. John Wyllie.

Ordinary Physicians and Lecturers on Clinical Medicine—Dr. Byrom Bramwell; Dr. Geo. A. Gibson; Dr. Alexander Bruce; Dr. R. W. Philip; Dr. William Russell.

Gynæcologists—Dr. A. H. F. Barbour; Mr. N. T. Brewis.

Physician for Diseases of the Skin—Dr. Norman Walker.

Assistant Physicians—Dr. Murdoch Brown; Dr. G. Lovell Gulland; Dr. J. J. Graham Brown; Dr. Francis D. Boyd; Dr. R. A. Fleming; Dr. H. Rainy; Dr. Chalmers Watson; Dr. Edwin Bramwell.

Assistant Gynæcologists—Dr. F. W. N. Haultain; Dr. J. H. Ferguson; Dr. Wm. Fordyce.

Assistant Physicians for Diseases of Skin—Dr. Frederick Gardiner; Dr. R. C. Low.

Medical Electrician—Dr. Dawson Turner.

Assistant Medical Electrician—Dr. W. Hope Fowler.

Medical Registrar—Dr. A. Dingwall Fordyce.

Surgical Department.

Consulting Surgeons—Sir P. H. Watson; Mr. Joseph Bell; Mr. A. G. Miller; Dr. P. H. Maclaren; Dr. C. W. MacGillivray.

Consulting Ophthalmic Surgeons—Dr. Argyll Robertson; Mr. George A. Berry.

Consulting Aural Surgeons—Dr. P. McBride; Dr. R. McKenzie Johnston.

Consulting Dental Surgeon—Dr. John Smith.

Regius Professor of Clinical Surgery—Mr. Annandale.

Professor of Surgery—Mr. Chiene.

Ordinary Surgeons—Mr. J. M. Cotterill; Mr. Chas. W. Cathcart; Mr. F. M. Caird; Mr. Hodsdon.

Ophthalmic Surgeons—Dr. George Mackay; Dr. Wm. George Sym.

Surgeons to Ear and Throat Department—Dr. A. Logan Turner; Dr. J. Malcolm Farquharson.

Dental Surgeons—Mr. Wm. Guy; Mr. J. H. Gibbs.

Assistant Surgeons—Mr. David Wallace; Mr. Alexis Thomson; Mr. Alexander Miles; Mr. John W. Dowden; Mr. A. A. Scot-Skirving; Mr. George L. Chiene; Mr. W. J. Stuart.

Assistant Ophthalmic Surgeons—Dr. J. V. Paterson; Dr. A. H. H. Sinclair.

Assistant Surgeons to Ear and Throat Department—Dr. John S. Fraser; Dr. John D. Lithgow.

Pathologist—Dr. Theodore Shennan.

Assistant Pathologists—Dr. W. T. Ritchie; Dr. Henry Wade; Dr. W. C. Dickson.

Surgical Registrar—Mr. E. Scott Carmichael.

Superintendent—Colonel W. P. Warburton, M.D., C.S.I.

HOSPITAL TICKETS.—Perpetual Ticket, in one Payment, £12; Annual Ticket, £6 6s.; Six Months, £4 4s.; Three Months, £2 2s.; One Month, £1 1s. Separate Payments amounting to £12 12s. entitle the Student to a Perpetual Ticket, on production of previous Season Tickets.

Appointments.

No fees are charged for any of the Medical or Surgical Appointments to this Hospital, which are as follows;—

1. Resident Physicians and Surgeons, who must be registered as legally qualified Practitioners, are from time to time appointed by the Managers, on the recommendation of the Physicians and Surgeons. The holders of these offices live in the House free of charge. The appointment is for six months, but may be renewed at the end of that period by special recommendation.
2. Non-Resident Physicians and Surgeons or Clinical Assistants, who must also be registered as legally qualified Practitioners, are appointed by the Managers on the recommendation of the Physicians and Surgeons. The appointment is on the same terms as that of Resident Physicians and Surgeons.
3. Clerks and Dressers are appointed by the Physicians and Surgeons. These appointments are open to all Students and Junior Practitioners holding Hospital Tickets.
4. Assistants in the Pathological Department are appointed by the Pathologists.

WILLIAM S. CAW, *Treasurer and Clerk.*

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Mr. STOCKER is one of the Authors of "*Medical Partnerships, Transfers and Assistantships*," which describes fully the conditions usual in Medical Deeds (Partnerships, Transfers, etc.).

Telegraphic Address: "TRIFORM, LONDON." Telephone No. 1854 Gerrard.

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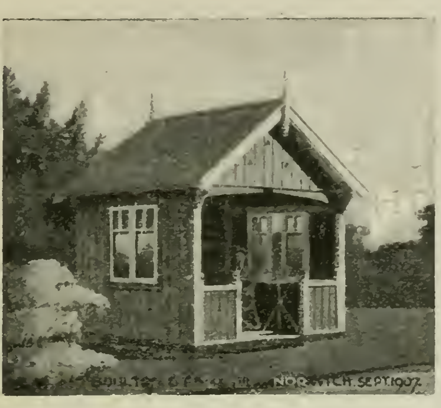

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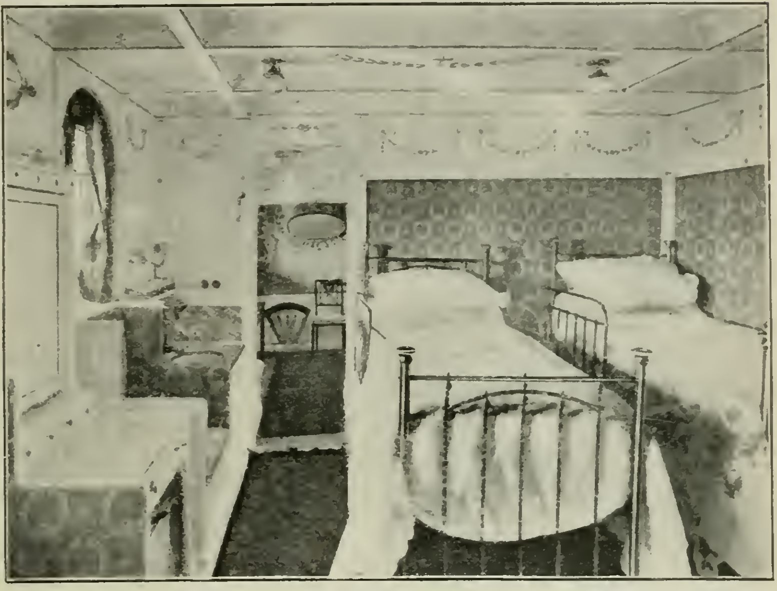

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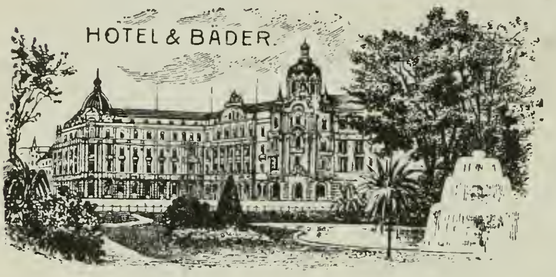
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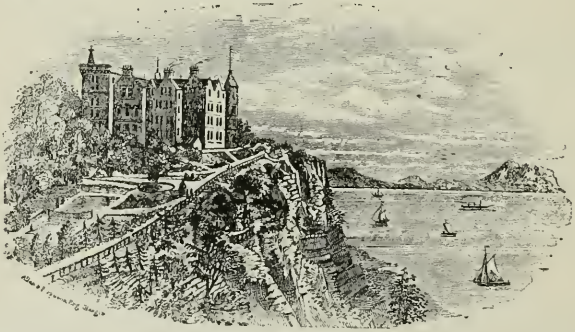

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Telephone No. 1032.

These Hospitals are built on the Villa system, and there are also Cottages on the demesne (154 acres), which is 150 ft. above the sea-level and commands an extensive view of the Dublin Mountains and Bay.

Voluntary Patients admitted without Medical Certificates.

For further information apply for illustrated prospectus, etc., to the Resident Medical Superintendents, Dr. HENRY MARCUS EUSTACE, Highfield. Drumcondra, or Dr. WILLIAM NEILSON EUSTACE, Hampstead, Glasnevin; or at the Office, 41, Grafton Street, Dublin. Telephone 198. On Mondays, Wednesdays, and Fridays from 2 to 3 p.m.

East Sussex County Asylum,

HELLINGLY MENTAL HOSPITAL.

IN addition to the accommodation provided for Private Patients in the Hospital, two wards of the Main Building have been set aside for the same purpose, at a reduced charge of One Guinea per week for each person from the Administrative County of East Sussex, and £1 2s. 9d. for each person from outside the County, to include all things necessary except clothing.

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There is a separate detached block for children.

For particulars apply to the MEDICAL SUPERINTENDENT.

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Physician for Mental Diseases to the Sheffield Royal Hospital.

THE House is a spacious Family Mansion, with extensive pleasure grounds, including good Croquet and Tennis Grounds, and an immense Park, containing Private Drives and Walks of several miles in extent. It is situated in the heart of the famous Robin Hood Country (5 miles from Sheffield, 4 from Rotherham), and is surrounded by beautiful scenery, and an atmosphere free from smoke and impurity. Situation dry and healthy. The arrangements are of a domestic character. The Proprietors welcome visits from the usual Medical Attendant of the Patient during her residence. Under the New Act Voluntary Patients can be received, without Certificates, on own personal application. The Rev. R. T. C. SLADE, Mus. Bac., Vicar of Thorpe-Hesley, acts as Chaplain, and conducts regular Services.

The Resident Physician may be seen at the Grange; or at Leavygreave House, Hounsfield Road, Sheffield, by appointment. (Nat. Tel. No. 34, Rotherham.)

GRANGE LANE STATION (M. S. & L. Railway) is within a quarter of a mile of The Grange, and may be reached via Sheffield or Barnsley direct; or via Rotherham, changing at Tinsley.

FOR TERMS, FORMS, &C., APPLY TO THE RESIDENT PHYSICIAN.

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PRIVATE Asylum for the Care and Treatment of Ladies and Gentlemen mentally afflicted. Voluntary Boarders also received without certificates.

For terms apply to: J. A. COOKE, M.R.C.S., L.R.C.P., D.P.H.,
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FOR THE UPPER AND MIDDLE CLASSES.
FOUNDED 1835. *NATIONAL TELEPHONE: No. 56.*

The Institution is pleasantly situated in a healthy locality, one mile from the Northampton Stations of the London and North-Western and Midland Railways, and one and a half hours only from London; and is surrounded by nearly 200 acres of park and pleasure grounds. The main object of the Institution is to provide accommodation and comforts suitable to the former social and present mental condition of persons belonging to the above-mentioned classes only, at moderate rates of payment. The terms of admission are from one and a half to four guineas a week, according to the requirements of the case. Patients paying higher rates can have special attendants, horses and carriages, and private rooms, either in the Hospital or in detached villas in the grounds of the Hospital, or at Moulton Park, a branch establishment two miles from the Hospital. Ample means of amusement and occupation are provided, including riding, boating, cricket, croquet, lawn tennis, and hockey. Billiard-rooms and a large recreation-room and theatre, with a central drawing-room are also provided for winter entertainments. Patients who ride can be provided with horses, or can keep their own at the Hospital stables. Good horses can be hired in the town.

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THE SEASIDE HOUSE OF ST. ANDREW'S HOSPITAL.

The Hall is beautifully situated, in a park of 250 acres, close to the sea, and in the midst of the finest scenery in that district. The beach for more than a mile belongs to the estate, and there is a private bathing-house. Voluntary Boarders can be received into this house, or at the Villas in the Park.

FOR FURTHER INFORMATION APPLY TO THE MEDICAL SUPERINTENDENT,
ST. ANDREW'S HOSPITAL, NORTHAMPTON.

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A Private Licensed House for the treatment of Gentlemen suffering from any sort of Mental Disease.

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SITUATED amongst charming scenery, 600 ft. above the sea, large grounds, pure water, perfect sanitation, and the bracing air of the "English Highlands."

Accessible from all parts. Good train service on G.W. and L. & N.W.R. Station within one mile.

Constant occupation and congenial recreation are specially attended to, and all sorts of indoor and outdoor amusements are provided.

The extensive Grounds, Farmery, and Workshops provide ample occupation. The splendid hill climate is most beneficial.

For the Terms, which are moderate, apply to the RESIDENT MEDICAL PROPRIETOR.

Telegrams—Stretton House, Church Stretton. *Telephone*—P.O. 10, Church Stretton.

THE RETREAT, YORK.

ESTABLISHED 1792.

A Registered Hospital for the Treatment of Mental Diseases.

Under the management of a Committee of Members of the Society of Friends. Situated about two miles from York Station. The Patients are derived from the **Upper and Middle Classes,** and none are paupers or rate-aided. **Terms from 48/- weekly.**

Voluntary Boarders are received on their own application. Nurses who have been trained at least three years are available for private nursing.

For further particulars as to the resources of the Institution, and information respecting the admission of Patients, see the Annual Report, which will be sent on application to Dr. BEDFORD PIERCE, the Medical Superintendent. *Nat. Telephone:* **112 York.**

THROXENBY HALL, Near SCARBOROUGH.

A Branch House connected with The Retreat, York, situated near the Raincliffe Woods, about two miles from Scarborough, for the reception of **Convalescent Patients,** also for the treatment of persons suffering from **Incipient or Mild Forms of Mental Disorder** who cannot be certified as of unsound mind, and who wish voluntarily to place themselves under skilled treatment. —For further particulars apply to the Matron, or to Dr. BEDFORD PIERCE, at THE RETREAT, YORK. *Nat. Telephone:* **282 Scarborough.**

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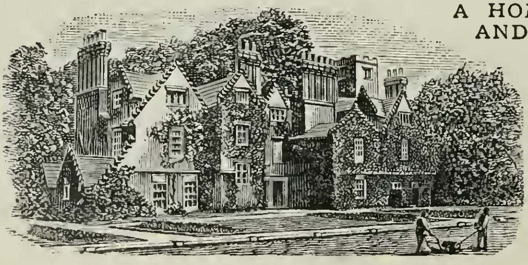

A HOME FOR NERVOUS AND MENTAL CASES.

The House stands in grounds of ten acres (within 5 minutes' drive of either Station), and is devoted to the Care and Treatment of a few Ladies suffering from Nervous and Mental Disorders, who enjoy the comforts, privacy, and occupations of home-life. Voluntary Patients are received without Certificates.

For terms, etc., apply to the Resident Proprietor,

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Telegrams: "DICKSON, BUXTON." *National Telephone:* 13, BUXTON.

WYE HOUSE ASYLUM, BUXTON, DERBYSHIRE.

ESTABLISHED IN 1858, FOR THE

Care and Treatment of the INSANE of the Higher and Middle Classes.

THE NEW INSTITUTION COMPLETED 1901.

Resident Physicians {GRÆME DICKSON, L.R.C.P. & S. Ed., L.F.P.S. Glasg., *Med. Supnt.*; *and* ASSISTANT MEDICAL OFFICERS at Buxton and in N. Wales.

Chaplain: REV. C. C. NATION, M.A. (Vicar of Buxton and Rural Dean).

THIS Institution has been established for the **Reception of Patients of Both Sexes of the Higher and Middle Classes**, for whom it is admirably adapted by its position and appointments. It is erected on an eminence surrounded with scenery of the most varied character, and the views from the House and Terraces extend over many miles of picturesque country. There is also in connection a Summer Residence on the coast of North Wales. The House is furnished throughout on the most liberal scale, and fitted up and arranged as a Gentleman's Family Residence. Voluntary Boarders can be received.

The Sanitary arrangements and Ventilation are modern in design and *perfect* in construction, and are certified to be so by the Sanitary Authority.

The Medical Superintendent lives in the House, and is assisted in his duties by a Resident Assistant Physician, and an experienced Lady Superintendent.

Every exertion is made to promote health and comfort, both by moderate bodily employment and by variety in amusements, such as reading, music, drawing, excursions, golf, billiards, croquet, lawn tennis, theatricals, re-unions, etc. A library is provided, containing some 2,000 works of varied character, suited to the condition of the patients; also periodicals, magazines, and newspapers.

Due provision is made for the spiritual welfare and consolation of the Patients, and Divine Service is held every Sunday in the Institution.

The Pleasure Grounds, which are very spacious, have been laid out in the most tasteful manner especially for the recreation of the Patients; and contain conservatories, lawns for croquet and tennis, a private golf course, and other out-door games; also a theatre, two billiard rooms, and workshop for the in-door occupation of Patients. The House is heated throughout by means of hot-water apparatus and open fireplaces.

Buxton is directly accessible by the Midland and the L. & N.W. Railways. It is situated on the mountain limestone formation, 1000 feet above sea level. Being a watering-place, it affords exceptional advantages and varied recreations to convalescent Patients.

Particulars of Terms and Forms of Admission on application to THE MEDICAL SUPERINTENDENT.

FOR THE TREATMENT OF MENTAL DISEASES.

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MRS. STANLEY GILL, & MISS VIOLET FLORENCE GILL.

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T. R. GLYNN, M.D., F.R.C.P. Lond.,
Consulting Phys. Liverpool Infirm., & Prof. of Med. Univ. Coll. Liverpool.

THIS House, specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen mentally afflicted, is delightfully situated near the coast between Liverpool and Southport, so that patients have the benefit of pure bracing sea air, for which Formby is noted. The House is in the country, and stands in several acres of ornamental well-wooded grounds, the surroundings being in every way bright, cheerful and pleasant. As the Licensees reside on the premises they are able to devote the whole of their time to the constant supervision of the patients. All kinds of out- and in-door amusements and occupation provided. Voluntary Boarders without certificates admitted. Terms moderate.

The Licensees have also a Private Residence at Deganwy, North Wales, for the treatment of mild borderland and convalescent patients.

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(An Institution for the Care and Training of the Feeble-minded.)

Scholastic Tuition by Kindergarten methods. Industrial Training in Carpentry, Basketmaking, Shoemaking, Tailoring, Knitting, Sewing, etc. Separate sitting and bedroom accommodation. For terms and further particulars apply to the House Governor.

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A REGISTERED HOSPITAL FOR MENTAL DISEASES, situated in the City of Lincoln, near to the Cathedral.

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DR. RUSSELL, *Resident Medical Superintendent.*

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CHURCH STREET, EPSOM.

This Home has been established over fifty years for the Care and Treatment of Ladies suffering from Mental Ailments.

TERMS, &c., on application to—

MISS M. O. DANIEL, *Res. Licensee*, or to DR. E. C. DANIEL, *Co-Licensee.*

MIDDLETON HALL,

MIDDLETON ST. GEORGE, Co. DURHAM.

PRIVATE ASYLUM FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN.

THE HOUSE, which stands amid well-wooded grounds, in a healthy and pleasant country in the valley of the Tees, has been recently erected from plans approved by the Commissioners in Lunacy, and embodies all the latest improvements in the construction of Homes for the Nervous and Mentally Afflicted. The building is **fire-proof**, and lighted throughout by electricity, and the heating is aided by a system of steam pipes.

Private sitting rooms and special attendants are provided if required.

Voluntary Boarders, not under certificates, can be received.

Terms to be had on application to—

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THE PLEASAUNCE,

YORK.

A Private Home for Ladies only of the upper and middle classes.

Ladies can be received either as voluntary patients or certified under the Lunacy Act, 1890.

Apply to Dr. SWANSON, Resident Medical Proprietor.

GROVE HOUSE,

ALL STRETTON, CHURCH STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Cure and Treatment of a limited number of LADIES MENTALLY AFFLICTED.

CLIMATE HEALTHY AND BRACING.

APPLY TO

Dr. McCLINTOCK, Resident Medical Superintendent.

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THIS PRIVATE ASYLUM, which was founded by the late W. H. O. SANKEY, M.D., F.R.C.P., for the reception of a limited number of

Ladies and Gentlemen MENTALLY AFFLICTED,

is now conducted on the same lines by his son, E. H. O. SANKEY, M.A., M.B., B.C., Cantab.

The Ladies' Division is directly supervised by Mrs. SANKEY.

The Mansion stands high, among handsomely laid out gardens in the midst of a picturesque deer park (about 70 head of deer are kept), and commands a magnificent view of Welsh mountain scenery.

Carriages, horses, lawn-tennis, golf, trout and other fishing are provided.

Arrangements can be made to enable friends of patients to reside in the House as Boarders if so desired.

The Asylum is situate about ten miles from Shrewsbury, within easy distance of Baschurch Station, G.W.R., whither carriages can be sent at any time for visitors.

Letters and Telegrams should be addressed to

DR. SANKEY, Boreatton Park, BASCHURCH, SALOP.

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HOSPITAL FOR THE INSANE,

NEAR STAFFORD.

Chairman of the Committee of Management—

THE RIGHT HONOURABLE THE EARL OF DARTMOUTH.

This Hospital, which is beautifully situated in a high and healthy position, with extensive grounds, Cricket Field, Lawn Tennis Courts, Golf Links, etc. is devoted to the Care and Treatment of the Mentally Afflicted of the Upper and Middle Classes.

PRIVATE ROOMS with Special Attendants in the Hospital, or semi-detached Villas in the grounds, can be arranged. Terms on Application.

For further Particulars apply to R. W. HEWSON, *Medical Superintendent.*

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FEMALE PRIVATE PATIENTS.

A SEPARATE and DETACHED BLOCK has just been opened. Terms: **One Guinea per week**, which includes everything except clothing. This Building is distinct from the main Asylum, and has separate recreation grounds.

For further particulars, apply to the Medical Superintendent,

Dr. S. R. MACPHAIL, Rowditch, DERBY

SPRINGFIELD HOUSE,

NEAR BEDFORD.

(TELEPHONE No. 17. **Within an hour of London by Midland.**)

An Institution for the

CARE AND CURE OF THE INSANE.

Under the Personal Direction of the Licensees

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(Late Resident Medical Superintendent of Saughton Hall Asylum, Edinburgh;)

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(ASSISTED BY LADIES' AND GENTLEMEN'S COMPANIONS.)

DR. BOWER attends at 5, Duchess Street, Portland Place, W., on Tuesdays, from 4 to 5.

Ordinary Terms = Three Guineas per week.

Vacancies are advertised each week in the *British Medical Journal* and the *Lancet.*

BETHEL HOSPITAL, NORWICH.

ESTABLISHED A.D. 1713.

THIS Institution is an endowed Hospital, registered under the Lunacy Acts, and managed by a Board of Governors who have no pecuniary interest in its success, but whose sole object is to promote the comfort and well-being of the Patients.

The Hospital is arranged for both sexes, and is especially adapted for those whose means will not permit of their being sent to an expensive and luxurious Institution for the Insane, and who may object to the associations of a pauper asylum.

The terms for admission are **thirty shillings per week or more,** according to Patients' condition and circumstances, which includes everything, except clothing, carriage exercise, or any expenses incurred for amusement beyond the Hospital grounds.

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SAMUEL J. BARTON, Esq., M.D.

(Consulting Physician to the Norfolk and Norwich Hospital).

RESIDENT MEDICAL SUPERINTENDENT:

JAMES FIELDING, M.D., M.R.C.S. Eng., L.R.C.P. Edin.

CLERK TO THE GOVERNORS:

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APPLICATION FOR ADMISSION TO BE MADE TO THE

Resident Medical Superintendent, BETHEL HOSPITAL, NORWICH.

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For the Care and Treatment of Ladies and Gentlemen Mentally afflicted.

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Suitable LADY PATIENTS can be received into—

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A House is taken at the Seaside for the Patients during the Summer months

The Electric Trams pass the Entrance gates of Lambridge House & Bailbrook House.

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KINGSDOWN HOUSE,

BOX, WILTS.

Licensed for the Treatment of Diseases of the Brain and Nervous System.

THIS house has been entirely remodelled, and affords good accommodation for the treatment of all forms of Mental and Nervous Disorders.

It is situated 450 feet above sea level, and commands extensive views of the surrounding country.

Box Station (G.W.R.) is fifteen minutes, and Bath Stations (Midland and G.W.R.) are 5½ miles from the house.

For terms apply to—

H. C. MacBRYAN, *Resident Proprietor and Medical Superintendent, formerly of the London County Asylum, Hanwell, W.*

N.B.—Mr. MacBryan attends at 40, Gay Street, Bath, on Mondays, Wednesdays, and Fridays. Telephone Number—2 Box.

FENSTANTON,

Christchurch Road, STREATHAM HILL.

A Private Asylum for the Care and Treatment of Ladies Mentally Afflicted.

Established 50 years. Formerly at Peterborough House, Fulham, under Dr. R. Gardiner Hill.

A Mansion on an elevated site surrounded by 12½ acres of Garden, etc., and within five minutes' walk of Tulse Hill Station (L. B. & S. C. R.); other Stations, Herne Hill (L. C. & D. R.) and Streatham Hill.

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PECKHAM HOUSE,

PECKHAM, S.E.

Telegrams: "Alleviated, London." Telephone 1576 Hop.

Extensive arrangements are made in this Asylum for the reception of PRIVATE PATIENTS of BOTH SEXES.

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Further particulars can be obtained upon application to the RESIDENT PHYSICIAN.

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CLARENCE ROAD, CLAPHAM PARK.

A limited number of Ladies suffering from MENTAL and NERVOUS DISORDERS are received for treatment under a specialist. The house stands in large grounds.

For further Particulars see Illustrated Prospectus from the Proprietress,
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A HOME FOR THE CARE AND TREATMENT OF LADIES MENTALLY AFFLICTED.

Apply to Mrs. CHAPMAN (Resident Lady Superintendent), or to A. H. SUTHERLAND, Esq. (Licensed Propr.), 2a Marloes Road, Kensington, W.

NEWLANDS HOUSE,

Telephone No. 524 Streatham. **Tooting Bec Road, Tooting, S.W.**

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THE GOVERNORS OF

BETHLEM ROYAL HOSPITAL

ARE PREPARED TO RECEIVE A LIMITED NUMBER OF PATIENTS AT TWO GUINEAS A WEEK, INCLUSIVE.

All particulars may be obtained from the Resident Physician, or the Steward of the Hospital.

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Telegrams: "ENVOY, LONDON." Telephone: 5608 Central.

St. Luke's Hospital

For Mental Diseases,
OLD STREET, LONDON.

ESTABLISHED 1751.

For the TREATMENT OF MENTAL DISEASES. Admission on payment of 15/- to 30/- per week, or gratuitously.

CONVALESCENT ESTABLISHMENT at ST. LAWRENCE ON SEA, near RAMSGATE. Voluntary Boarders (Ladies) are received at the Home.

TRAINED NURSES supplied from the Private Nursing Staff for nursing mental and nervous cases at their own Home.

Enquiries should be addressed to the Secretary at the Hospital.

W. H. BAIRD, *Secretary.*

NORTHWOODS HOUSE,
WINTERBOURNE, near BRISTOL.

A Sanatorium for Ladies and Gentlemen suffering from Nervous and Mental Disorders.

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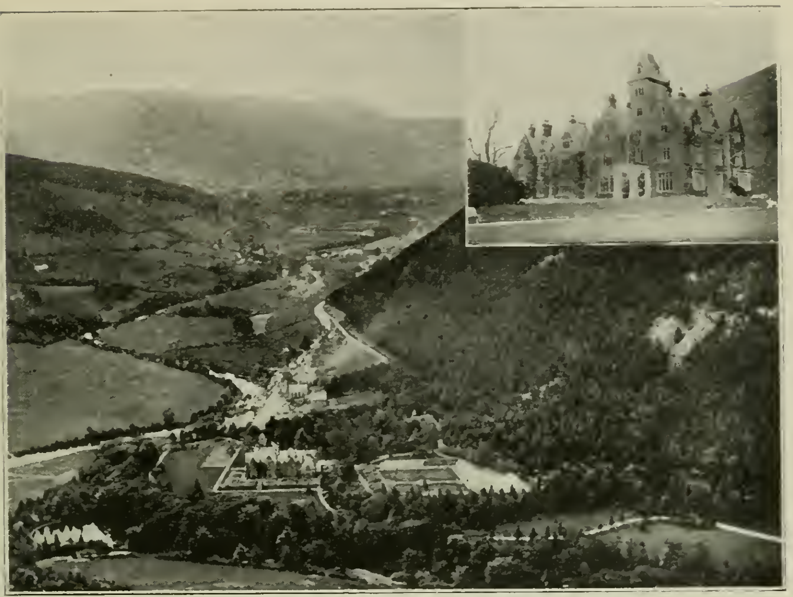

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THE Home is the one Establishment in the British Isles where it is made a strict rule that only **GENTLEMEN OF THE UPPER CLASSES** of society are admitted for treatment, suffering from the various forms of disease produced by

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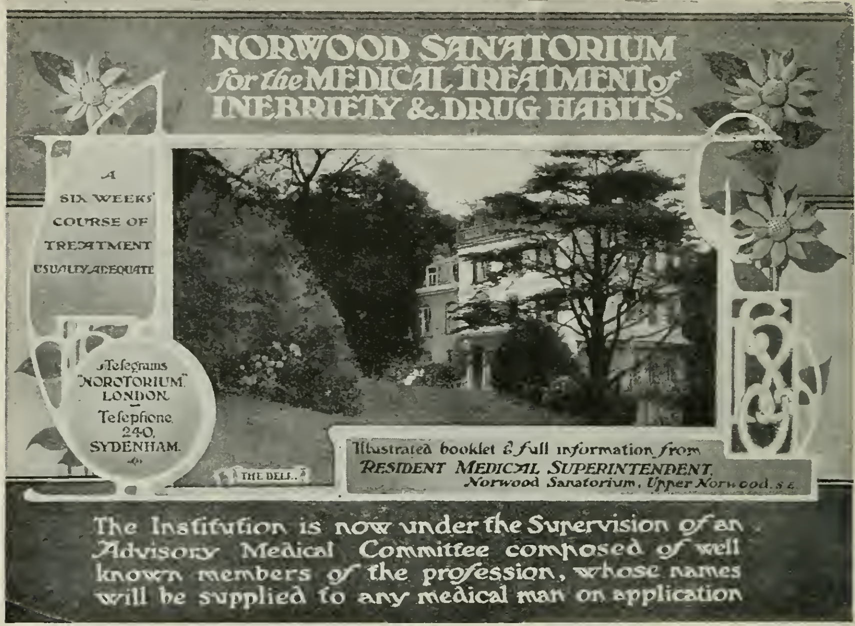

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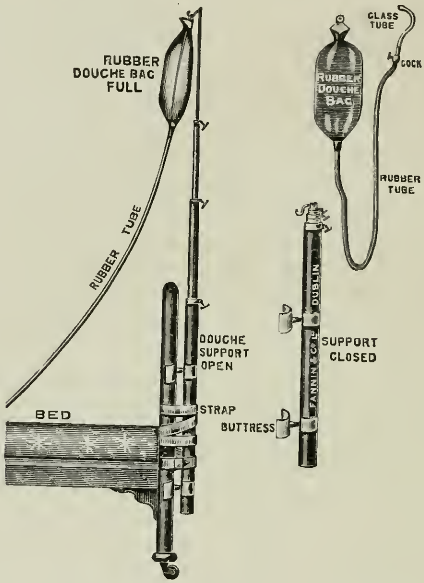

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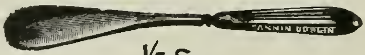

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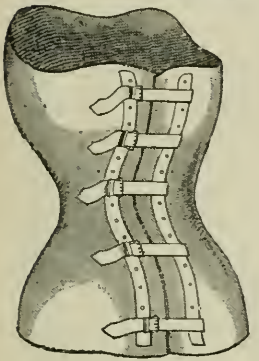

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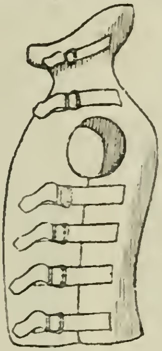

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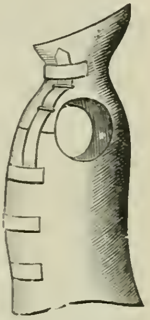

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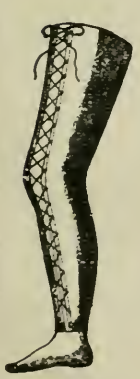

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When the foot part is required, also circumference at heel and instep, and length from centre of knee to ground.
If the limb is contracted the contour should be given.

Jackets, Splints, and Poro-Plastic in Sheets may be had of our Agents.

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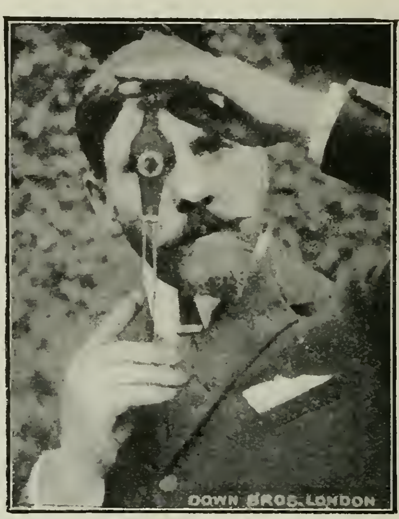

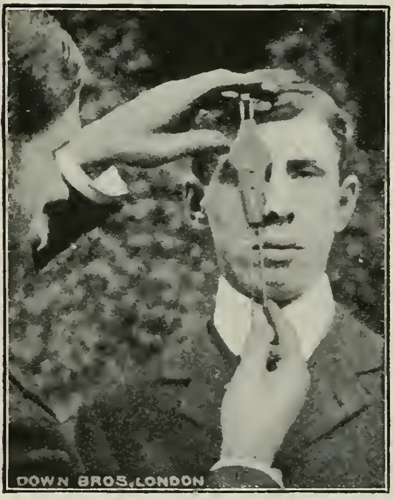

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If fitted with Electric
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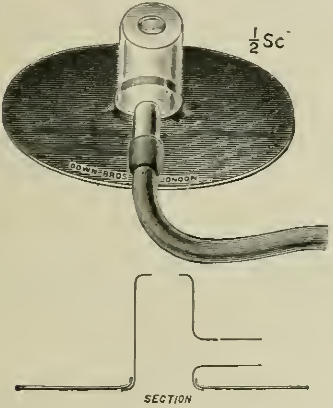
A NEW ASEPTIC WATERTIGHT SUPRAPUBIC DRESSING

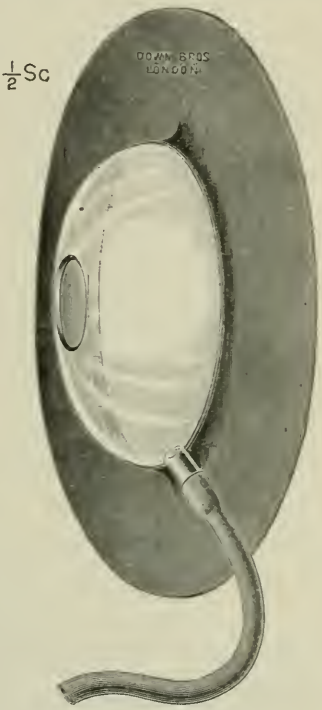
SUGGESTED BY
G. H. COLT, M.B., B.C., Cantab., etc.



Suprapubic Dressing, Round or Cylindrical Pattern.

The principle of the dressing may be stated as follows:—

It is possible to make a watertight joint with the patient's skin by means of sheet rubber and a solution of pure rubber in naphtha. To carry this into effect a glass capsule is made to which a piece of sheet rubber can be attached in a watertight manner, and from which the urine or lotion can flow away by a side tube. The upper part of the capsule is open to admit air. Siphonage is thus avoided and the urine flows off by its own pressure alone. The figures show two of the patterns.



Suprapubic Dressing, Oval Pattern.

THE SELECTION OF THE PIECE BEST SUITED TO THE CASE.

In general it may be stated that the small cylindrical glass, with the hole at the top, is best suited to every case in which the wound has been partially sewn up. The small glass should be used whenever practicable, as it is the least likely to become deranged.

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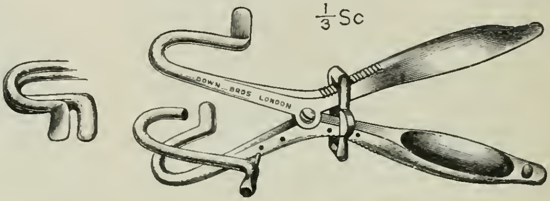

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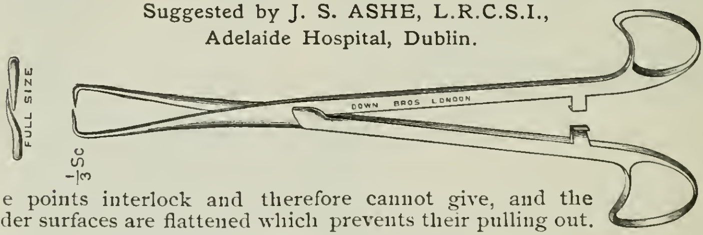

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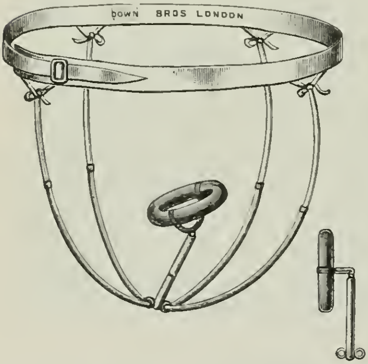
PRICE—**14s. 6d.**



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PORTABLE ASEPTIC OPERATION TABLE.

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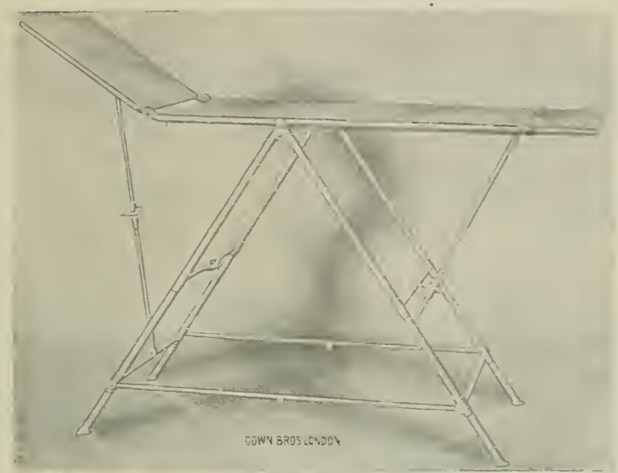

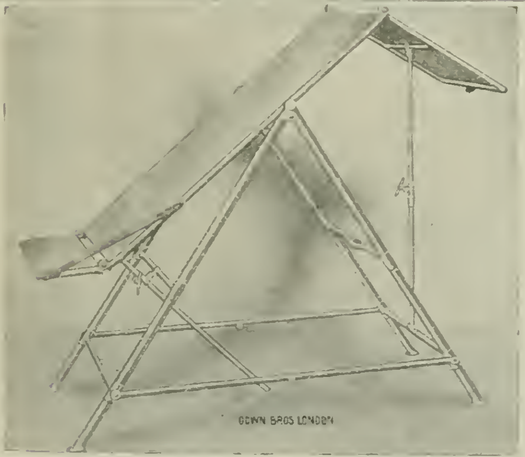

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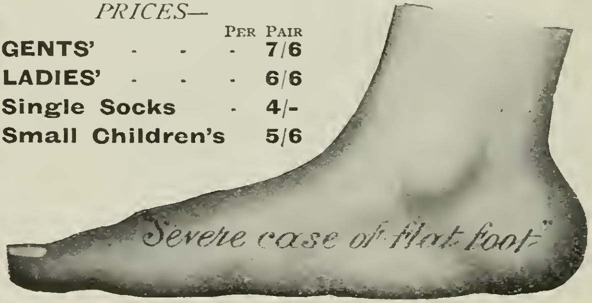
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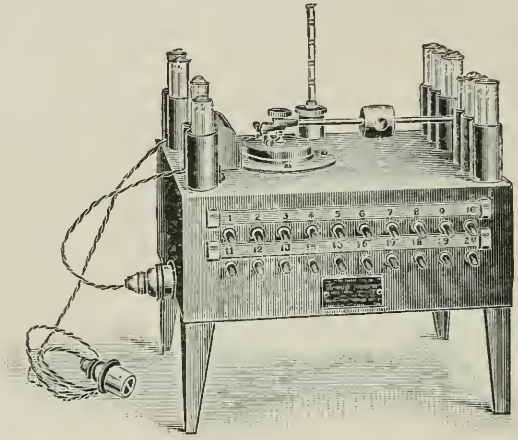
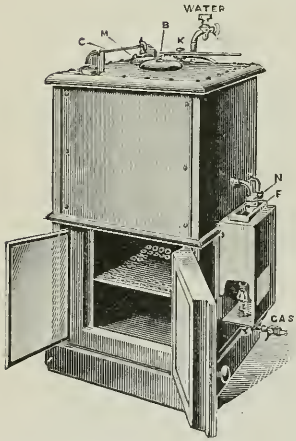


Hearson's Patent **OPSONIC INCUBATOR** for the Determination of the Opsonic Index.



Hearson's Patent
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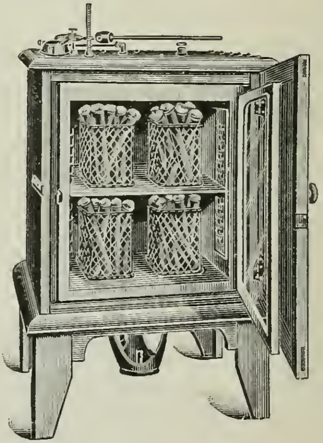
Particulars and Prices on application.



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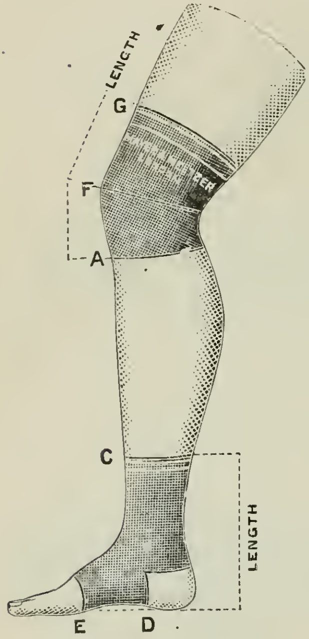

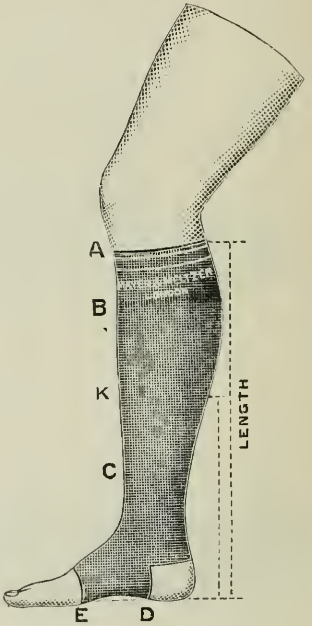

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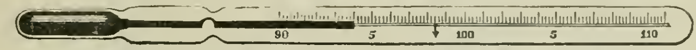

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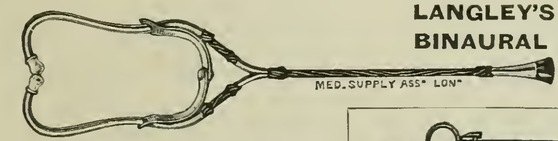

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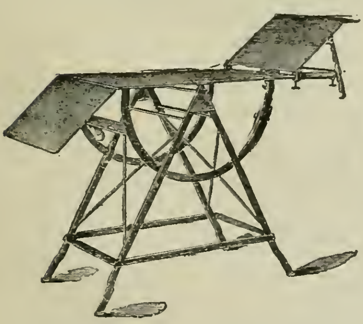

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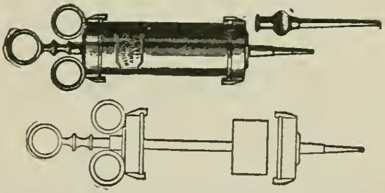

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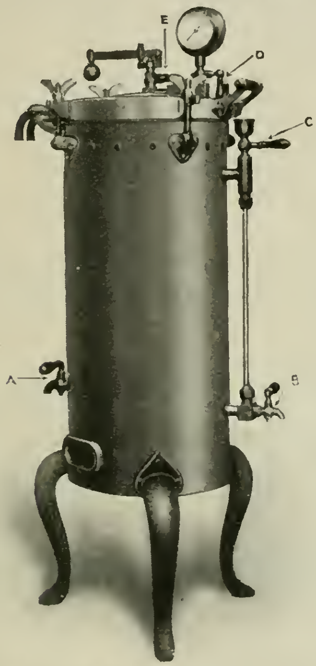

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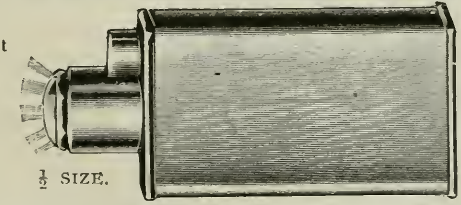

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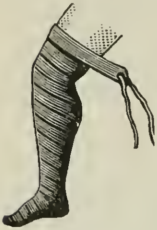

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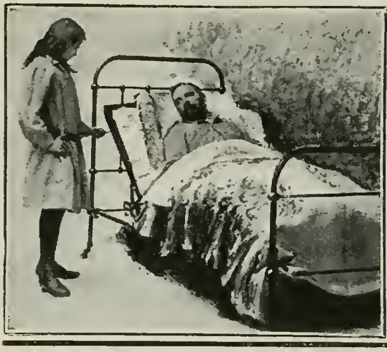

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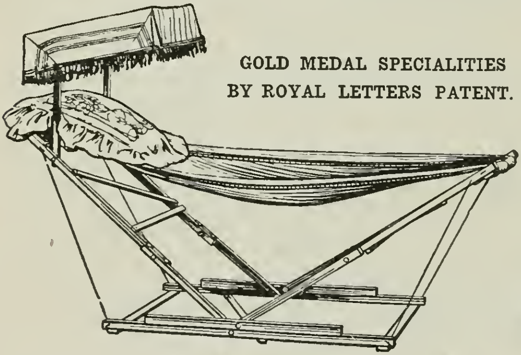

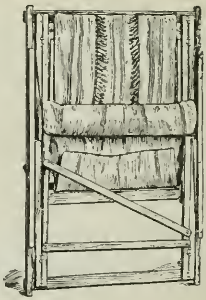

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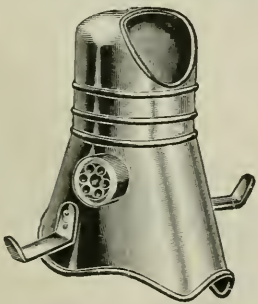

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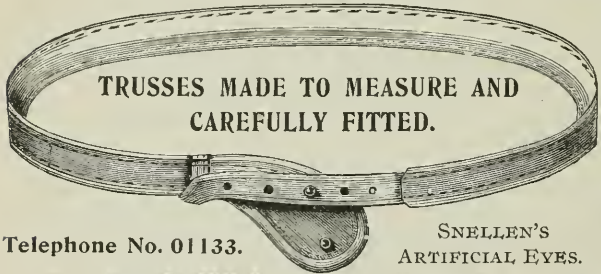

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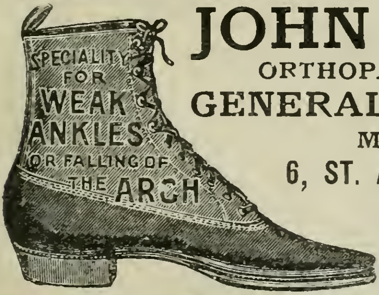

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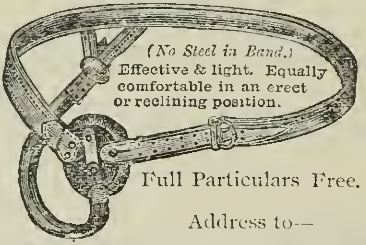

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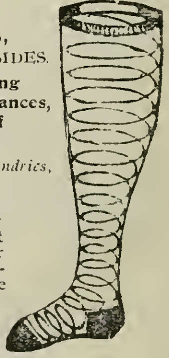

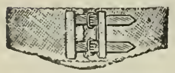

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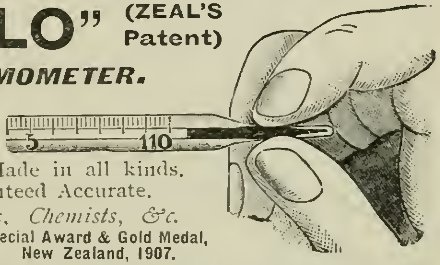

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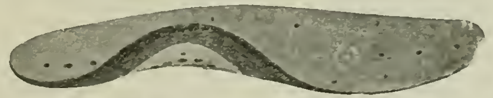

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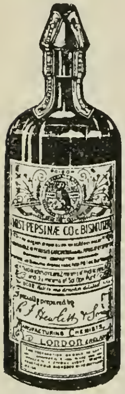

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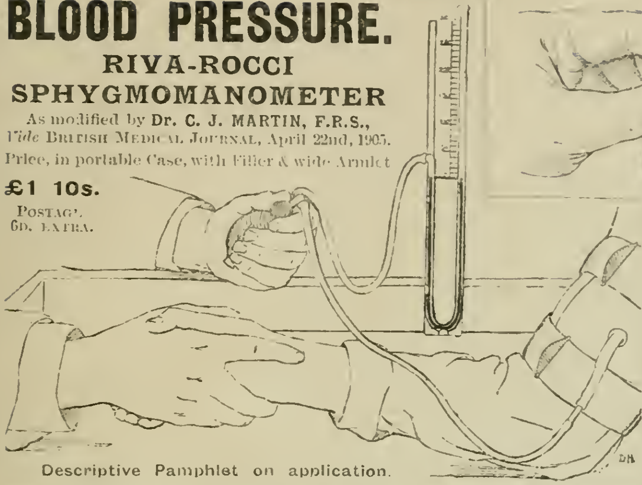

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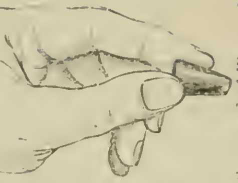

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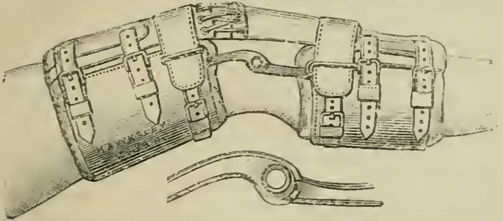

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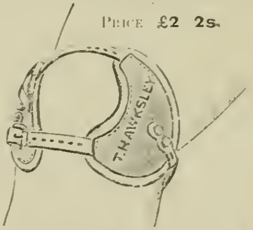

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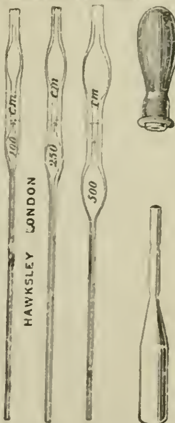

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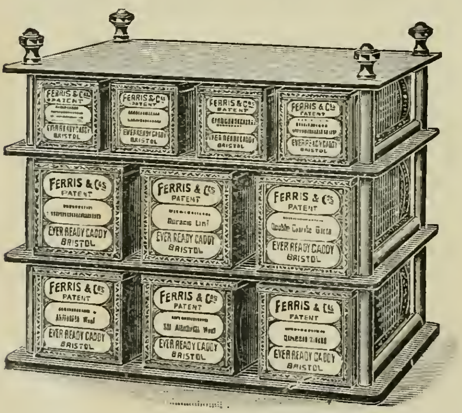

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